



Railway Age

Vol. 80

June 26, 1926

No. 38



The Cardinals' Red Train in N. Y. C. Mott Haven Yard, New York—International

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GENERAL NEWS DEPARTMENT..... 1986

Published every Saturday and daily eight times in June by the

Simmons-Boardman Publishing Company, 30 Church Street, New York

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The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.).

Entered at the Post Office at New York, N. Y., as mail matter of the second class.

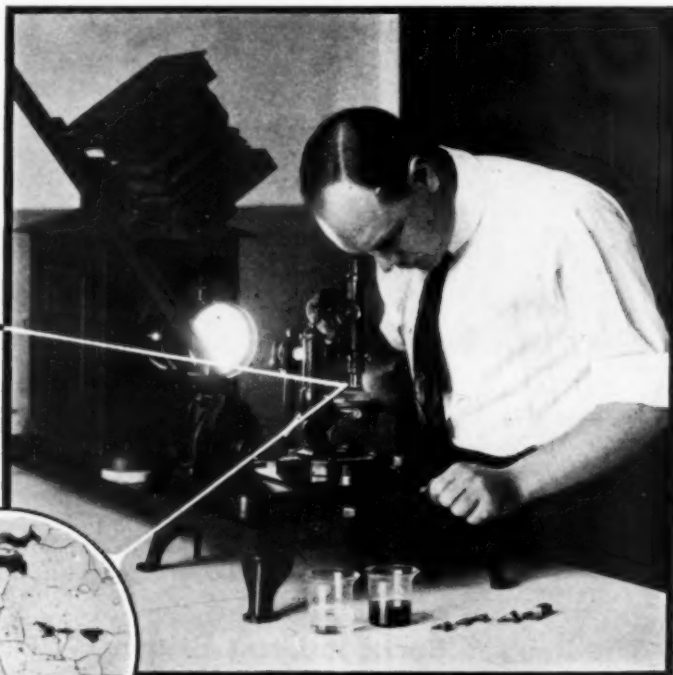
Subscriptions including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free: United States, Mexico and Canada, \$6.00. Foreign countries, not including daily editions, \$8.00. When paid through the London office £1.15.0. Single copies, 25 cents each, or 1s.

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Railway Age

Vol. 80, No. 38

June 26, 1926

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Further Reductions in Freight Claims

A FURTHER excellent reduction in payments of loss and damage claims was reported at the annual meeting of the Freight Claim division at Norfolk, Va., last week. Freight claim payments in 1925 were \$38,772,097, less by \$9,490,446 than the amount which the railroads paid out in such settlements in 1924. The amount charged to loss and damage freight was reduced to \$36,760,941 in spite of the extraordinary traffic of 51,000,000 carloads handled by the railroads last year. The ratio of loss and damage of freight to freight revenue last year was only 0.81 per cent, compared to 1.06 per cent in 1924, 2.36 per cent in 1921, and 2.95 per cent in 1919. The Freight Claim division is fortunate in being able to show such concrete results of the work its members are doing. It can point to them with the greatest pride. As President Aishton of the American Railway Association remarked at the recent meeting, the division attained in 1923 its goal to cut in half the \$120,000,000 claim payments made in 1920, and is now well on the way to its new goal of cutting the 1923 figure in half. The Freight Claim division takes its important work seriously, as it should. Its members have shown a most commendable spirit. The success that has annually rewarded its efforts has not lulled its members into a feeling of satisfaction and content, but has urged them on to even greater efforts. This, too, is as it should be. Not least in importance has been the success of the freight claim officers in co-operating with and securing the co-operation of officers in other departments. Their spirit has been most infectious. Beyond question the railroads owe to this spirit the substantial savings that are being made annually in freight claim payments.

Simplify Signal Aspects

THE movement to simplify and reduce the number of aspects of automatic and interlocking signals deserves the support of operating officers. The objective is to secure aspects in which no red light or equivalent stop indication need be passed at speed. The use of light signals in which lights or combinations of lights can be lighted or extinguished under the control of relay circuits assists in the simplification of signal aspects, in contrast to semaphore signals with oil lamps which cannot be extinguished or hidden at will. A study of the signal indication diagrams in the operating rule books of ten prominent roads shows eight indications of a green light over a red, a green over two reds, and, in one case, a yellow over a green over a red. Red marker lights on automatic signals also extend the complications. Where combinations of colored lights are used an engine-man on a high speed train ordinarily picks up the red light first, although he may take no immediate action, thinking that in a second or two he may pick up a yellow or a green light to qualify the red light. This few sec-

onds hesitation may be disastrous in case the stop indication is actually being exhibited. Certain American roads have developed signals to simplify the aspects. The position-light signal on the Pennsylvania, the color-light signal on the Lackawanna, the color-position light signal on the Baltimore & Ohio and the semaphore and light signals on the Santa Fe all possess characteristics of merit in respect to simplification. However, nothing definite has yet been done towards national standards. The Code of Operating Rules of the American Railway Association is now being revised and the Signal section is endeavoring to devise signal aspects designed especially for light signals that will effect a decided simplification and eliminate the necessity for an engineman passing a red light or equivalent at speed. The adoption and extensive use of such a simplified code of signal aspects depends primarily on the interest and co-operation of operating officers.

Need of Trained Trainmasters

THE railroads can always obtain machines and materials of the kind desired, but for men all that can be done is to take the best available from those who apply. This statement, from T. H. Carrow's address at Montreal, is one that ought not to be true. As to machinists it is to some slight extent untrue already; apprentice systems do supply some human material not entirely crude. But in what other feature can any road dispute Mr. Carrow's statement? We are at last alive to the desirability of heating water before it goes into the boiler, and we understand the economy to be accomplished by pre-cooling cantaloups before trying to put them into a refrigerator for a 3,000-mile journey; but as to scientifically pre-heating or pre-cooling a man who is to become a dispatcher, a trainmaster or a passenger solicitor, we are still in the darkness of the nineteenth century—or the eighteenth. Every superintendent who has not read and digested every word of Mr. Carrow's address will do well to turn again to the *Railway Age* of June 19 (page 1923) and read it through. He sets forth the issues in unusually lucid language. He does, indeed, dwell mostly on one phase of safety—saving the lives and limbs of employees—but this note is written to call attention to the very definite way in which his little lecture applies to another branch: to that kind of safety—prevention of collisions and derailments—which is promoted by the employment of very high grade men as trainmasters. Reading between the lines it is safe to say that this address calls for the establishment by every large road of a definite course—probably a four-year course—for the education of young men for the position of trainmaster. Does any one dispute this? Any large road ought to have from ten to fifty young men very definitely destined for this position. And Mr. Carrow's words call to mind those of W. C. Morse, who said that for a candidate for trainmaster moral character was more important than technical knowledge.

The Lesson of a Great Strike

SIX weeks have passed since the general strike in Great Britain was ordered terminated by the trade union leaders, but our readers will find extremely interesting and significant the article entitled "The Railway Strike in Great Britain," by Sir Ralph L. Wedgwood, chief general manager of the London & North Eastern Railway, which is published elsewhere in this issue of the *Railway Age*.

In various countries for some years the people have been threatened at intervals with general strikes as means of securing for organized labor economic or political objects which have proved unattainable by other means. The British general strike was the most important attempt to interrupt the entire industry and commerce of a nation that ever was made. It included a national railway strike, which was the third in Great Britain within 15 years. Transportation and other conditions in Great Britain are different from what they are in the United States, but Sir Ralph Wedgwood's description of the beginning, decline and collapse of the British railway strike, the measures adopted by the railway managements to cope with it and its final consequences to the railways and their employees should be of real value to the railways, the railway employees and the people of this country.

An editorial entitled "The Lesson of the British Strike" appears in the June number of the *Locomotive Engineers Journal*, the monthly magazine of the Brotherhood of Locomotive Engineers. This editorial affords a good illustration of an attitude very generally taken by labor union leaders. It shows that human nature is much the same in all classes and countries. When monarchy prevailed it was a generally accepted principle that the king could do no wrong. Under democracy it is a widely accepted principle that the people can do no wrong. Now that in many countries the labor unions are seeking to rule, their leaders tacitly take the position that organized labor can do no wrong.

The *Locomotive Engineers Journal* says, "There never would have been a general strike if the government had not forced it." Its theory is that the British government forced it because the "ruling class" would not give the organized coal miners all they wanted. "As a matter of self preservation," it says "the British Trades Union Congress had to back the miners' demand for a living wage with plans for a general strike last July." It says that the strike has taught that "if British workers in coal and other basic industries are to secure a living wage they must eliminate private profit and co-ordinate these industries in the hands of technical experts, which can only be done by nationalization." Why does not the *Locomotive Engineers Journal* say what it means—viz., that the only solution is socialism? It adds, "British labor has learned its tremendous united power and has seen how helpless the traditional 'ruling class' is when labor refuses to work," although elsewhere it naively complains that "the railroads refused to take back their employees unless they signed a humiliating apology for leaving the service."

It would pay locomotive engineers and other American railway employees, as a counterpoise to these misleading and radical statements of the *Locomotive Engineers Journal*, to read Sir Ralph Wedgwood's temperate and definite narrative of exactly what did occur. The coal miners had struck because of a controversy with their employers that the government had been unable to settle because neither employees nor employers would accept the terms the government proposed. The other national labor unions, including those of the railway employees, had no quarrel with their employers. The general strike was ordered by the trade union leaders for no purpose what-

ever except to coerce the government into bringing about a settlement of the dispute in the coal mines that would be satisfactory to the coal miners.

The railway labor unions had contracts with the railway companies, and when they struck it was in absolute violation of these contracts. What would the *Locomotive Engineers Journal* have said if, in order to help some other class of employers, the railway companies of Great Britain had locked out their employees in violation of these contracts? It would have bitterly denounced them; but it says not a word about the fact that the railway labor unions broke the contracts. While mentioning the "humiliating apology for leaving the service" which the employees signed, it gives not the slightest intimation that their apology consisted simply of an admission that in violating their contracts they had committed a wrongful act. According to the standard of honor now usually accepted in civilized countries a man demeans himself more by breaking a contract than he does by admitting that in breaking it he committed a wrongful act. Does the *Locomotive Engineers Journal* mean to preach the doctrine that it is dishonorable for employers to break contracts, but that it is all right for labor unions to break them, and therefore unjust and humiliating for them to be required to admit they have broken them and to make some reparation for it?

The British strike does not teach the lesson that propagandists such as the *Locomotive Engineers Journal* seek to draw from it. It teaches that the members of labor unions are likely to pay the price if they break their contracts. It teaches that in civilized, democratic countries public sentiment will array itself against and defeat a general strike called for the plain purpose of coercing the government, and that it can lead only to enormous losses in which the working class itself will participate. It indicates there is very little sentiment in Great Britain for the nationalization of basic industries, which the *Locomotive Engineers Journal* decides is the only way out for the British worker and which apparently it would favor in the United States.

The three national railway strikes in Great Britain, and especially the last, illustrate the fact that, as harmful as such a strike is, it is less dangerous than it was formerly believed to be or actually was. When a national strike of train service employees was threatened in the United States in 1916 it was anticipated, and probably with good reason, that it would completely demoralize industry and commerce and soon bring want and even starvation to people in large cities. It is extremely doubtful if a national railway strike could be made as effective in the United States as it was recently in Great Britain. Furthermore, since 1916 there has been introduced into our transportation situation in this country a factor of great importance. In that year there were only 3,300,000 passenger automobiles and 215,000 motor trucks in this country. There are now about 18,000,000 passenger automobiles and 2,500,000 motor trucks. Emphasis upon the influence on the outcome of a national railway strike in this country which would be exerted by this vast increase during the last ten years in means of motor transportation is unnecessary.

Organized labor still has in the strike a weapon of great potency if legitimately used for the purpose of trying to get reasonable wages and working conditions when other means fail. But the outstanding lesson of the British strike is that the general strike can do nothing but harm in any country except where conditions demand a revolution, and that strikes, even for economic purposes, should not be resorted to except when negotiation, mediation, arbitration and all other peaceable means of settlement have failed. The coal mine strike in Great Britain should have

been settled by arbitration, and the general strike was a huge blunder from the standpoint of organized labor, as most of its leaders now admit. Strikes are an industrial form of warfare, and like real war they are a game at which all parties usually lose. The road to prosperity for both capital and labor is through their co-operation in increasing the efficiency of production and in using peaceful means to determine the division of what is produced between those who produce it. We believe this is being more and more generally recognized by the railway employees of the United States, and that locomotive engineers will not be very favorably impressed by such declarations in favor of "nationalization of basic industries"—a mere euphemism for socialism—as their brotherhood organ makes in the editorial quoted above.

Wonderful Effects of Politics in Regulation

THREE different groups of government officials recently have taken three astoundingly inconsistent and antagonistic attitudes regarding the regulation of rates. Two of these groups, in assuming the attitudes they have, obviously have been controlled by considerations that totally disregard the principles in accordance with which the railways must be regulated if private ownership is to be maintained.

The first group of government officials referred to is composed of the members of the Interstate Commerce Commission. The commission, after an exhaustive investigation, upheld the so-called "surcharge" for sleeping and parlor car service as reasonable and one the railways should be allowed to continue to make in order to earn a fair return while avoiding excessive charges for other kinds of service.

The second group of government officials referred to is composed of members of western state railway commissions. These commissions are opposing the proposed advance of five per cent in freight rates in western territory. They claim that the western lines are earning enough from their freight business, but are losing money on their passenger business, and that therefore any advance made should be in passenger charges. In other words, their position is that the present passenger fares, with the surcharge added, are not high enough.

The third group of government officials referred to is composed of the members of the Senate Committee on Interstate Commerce. They have made a report favoring the abolition of the Pullman surcharge. The concluding paragraph of their report is as follows: "It is known that proceedings are pending before the Interstate Commerce Commission to readjust freight rates. Such readjustment should be made upon the merits. It is clear that the Pullman passenger travel should not be penalized because of inadequate revenue of some railroads from freight-carrying income."

The inconsistency of the attitudes of these groups of government officials regarding railway rate making becomes especially apparent and significant when it is considered that the Senate committee on Interstate Commerce includes the following western senators: Cummins of Iowa; Gooding of Idaho; Howell of Nebraska; Pittman of Nevada; Dill of Washington; Wheeler of Montana, and Mayfield of Texas. All these senators classify as valiant friends of the farmer. Nevertheless, while the western state commissions contend in effect that passenger charges should be increased to avoid an advance in freight rates on farm products, these western senators

join in a report advocating abolition of the Pullman surcharge upon the ground that "passenger travel should not be penalized because of inadequate revenue of some railroads from freight-carrying income."

What is the explanation of this amazing inconsistency in the attitude of government officials? It may be given in a word—politics. The farmers have many votes. Therefore when farmers oppose an advance in their freight rates the politicians say: "Certainly your freight rates ought not to be increased. The traveling public should pay a greater part of the cost of railroad service." Commercial travelers also have many votes. When they appear advocating abolition of the so-called "surcharge" the politicians say: "Certainly, the traveling public should not have to pay this excessive charge. It is clear that the Pullman passenger traffic should not be penalized because of inadequate revenue of some railroads from freight-carrying income."

Politics is a wonderful thing, especially when applied to regulation of railroads. The western politicians particularly are determined not to displease any large class of voters, provided they can all be pleased at the expense of railway earnings and service. Then when, as a result of the application of their political principles to regulation, the service rendered by the railways deteriorates and becomes inadequate, they will be the first, as they have been in the past, to denounce the managements of the railways and say that unless they do better government ownership must be adopted.

What a wonderful success government ownership and operation would be if the politicians dealt with it according to the same principles as many of them would apply now in the regulation of rates under private ownership!

Railway Statistics

THE most important business transacted at the 38th annual meeting of the Railway Accounting Officers' Association at Quebec, June 8 to 10, related to the revision of the Interstate Commerce Commission accounting classifications. This discussion this year was mostly about the classification of investment in road and equipment and there were also presented for consideration the income account, the profit and loss accounts and the operating revenue classifications. In view of the fact that basic principles are involved it is not surprising that there should have been in evidence much difference of opinion both among the accounting officers and between the association acting officially and the Bureau of Accounts of the Interstate Commerce Commission. This is nothing new.

The accounting officers and the commission have been similarly struggling over the classification of operating expenses for the past four years and seem on the whole to be now not far distant from where they started. Contrasted with this situation has been the status of affairs relative to statistics. This subject may or may not be as important as the classifications. To the accounting officers the classifications are of much the greater importance. To other departments of railway service and particularly to the operating department no doubt the statistics are of much greater moment. However, the accounting officers decided some three or four years ago to establish a standing committee on Statistics. To date this committee has continued of minor importance. Because the committee has been well chosen and has had enterprising chairmen it has done considerable constructive work. Thus this year, notably, it presented an interesting report defining railway statistical terms, units and phrases and containing valuable suggestions on the manner in which these can

be used in studying a railway's operating efficiency. But the point is that this was done purely on the initiative of the chairman. The committee has had practically no matters referred to it by the members or by the executive committee. Now, this state of affairs is significant.

Plainly there is something wrong when the accounting officers evidence so little interest in railway statistics as this. The statistics cost large sums of money to compile. The question is as to whether the units and their relationships are fully understood and whether they are used in the accounting department or elsewhere to a degree commensurate with the effort and cost applied to their compilation. That this question exists is recognized. It is being met by a policy that might well be designated as one of attrition because now and then one hears that a particular report or unit has been dispensed with and will no longer be available to the student. One instance was that of the cost per 1,000 gross ton-miles shown on the OS-D report, a valuable unit, having withal certain limitations, which was abolished at the end of 1924, as many observers were just beginning to appreciate its usefulness. And, there are others. The situation with reference to railway statistics is not good. The R. A. O. A. Committee on Statistics has made a plea for co-operation both on the part of the members of the accounting association and others interested. The association, acting officially, should leave no stone unturned to help the committee secure such co-operation because there is a great work to be done that is not being done now.

Whose Problem Is It?

IN a letter to the editor entitled "Cross Tie Requirements and Forest Conservation," which was published in the *Railway Age* of May 15, page 1293, R. D. Garver, assistant chief of the section of industrial investigations of the U. S. Forest Products Laboratory, chided the railways for their lack of co-operation in the conservation of our forest resources. He referred specifically to the rejection by the roads of a tie "with a small rotten spot in it," an undersized tie, ties "produced from sound dead trees or from the less desirable species," etc. In other words, he questioned the right of the railways to select the materials which they, from their experience, have found best suited to their needs. In this issue we publish two replies to Mr. Garver from railway officers who are close students of this subject and who are experienced in the purchase and use of cross ties. These letters bring to the fore the question of the proper attitude which the railways should take in their use of timber by reason of the fact that it is one of our natural resources.

All successful business today is conducted with the objective of effecting the greatest economy for its owners. Those practices which do not pay are abandoned. The timber industry itself is a good example of this policy, for no industry has been characterized by greater waste of natural resources than is in the destruction of non-merchantable timber. In accordance with this policy no railway is justified in buying ties that do not give it the lowest cost per service unit. Any other consideration is uneconomical and unsupported by modern business principles.

The specifications for ties were prepared with the needs of the consumer in view and restrictions as to size, soundness of timber, etc., were inserted for his protection. The production of small ties has been discouraged, for whenever it becomes "possible to market small ties at a fair profit" such ties will be produced in quantity. Likewise, as pointed out by Mr. Cook, the objection to the use

of ties "with a small rotten spot" lies in the fact that the first cost of the tie itself is only one of the factors entering into its final expense in track. Yet this "small rotten spot" will very probably be the limiting factor in the life of the tie and in the return from the entire investment, including treatment, cost of handling and insertion.

Much emphasis has been placed by producers on the effect of the limitations of the standard specifications for ties in creating waste in the utilization of timber. Yet a relatively small proportion of the ties need fail to comply with the specifications, for they provide for five sizes of ties, in addition to a serviceable reject, the latter being accepted by most roads, although at a price sufficiently low to eliminate any incentive to their making and at the same time providing an outlet for those which are produced in the making of specification ties. In their argument that the standard specifications do not conserve timber, tie producers ignore their responsibility as business men to develop other markets for their by-products rather than insist that their principal customer absorb them. All business is built on the principle of furnishing the buyer with the materials he desires at a fair price and of then developing other markets for the remaining products. A notable example is the meat-packing industry, as a result of whose operations it is possible for a consumer to purchase only that portion of the animal that he desires in the quantity that he desires; yet waste has been almost entirely eliminated.

Mr. Garver also criticized the railways because of the fact that only 50 or 60 per cent of the ties used in the country were treated. In this, as pointed out by Mr. Towner he ignores the fact that although the railways consume only about one-sixth of all of the timber produced, they treat approximately 90 per cent of all of the timber treated. In other words, they are far in the lead in their utilization of timber which has been treated and are entitled to commendation for this progress rather than criticism. Furthermore, the use of treated timber is increasing more rapidly on the railways than in all other industries combined.

In brief, the progress which the railways have made and are making in the utilization of timber through its extensive treatment with preservatives, as well as their insistence in the selection of only suitable material, affords a standard which other industries may well follow. The standard specifications for ties have done much to conserve forest resources by reason of their insistence on the utilization of only those timbers that will render the maximum life and postpone their replacement as long as possible. In spite of the objections that are being raised against the specifications, they are now being accepted more generally than ever before and they are also being enforced more generally. The best refutation of any plea for the lessening of the restrictions is offered by an examination of the ties actually being received by those roads which are condoning deviations from the specifications.

New Books

The Story of the Western Railroads By Robert E. Riegel. 346 pages. Size 5½ in. by 8 in. Bound in cloth. Published by the Macmillan Company, New York. Price \$2.50.

The unfortunate thing about the study of history is that so few teachers seem able to impart to the student the interest and romance that is to be found in the subject if one only knows how and where to look for these valuable characteristics. Similarly it is a familiar complaint on the

part of those who have received their schooling in the western states that history is less interesting to them because they do not have the opportunity to visit the scenes of the more important events of American history. Presumably, these persons envy the schoolboy who lives in the northeast or the south who may readily visit Independence Hall, Bunker Hill, Saratoga, Fort Ticonderoga, Jamestown or the battlefields of the Civil War, as the case may be. Of course, everyone knows that unfortunately the eastern scholar usually finds the study of history just as much of a boresome task as does his western counterpart, nearness to the scenes of greatest historical activity notwithstanding.

It is true that the history books have rather emphasized the colonial period, the Revolution, the War of 1812, and the Civil War. However, more recently there has come about a much keener realization of the fact that the west is not lacking in its historical interest. Theodore Roosevelt in his famous book "The Winning of the West" was probably the first to tell the American people that the settlement of the West made enthrallingly interesting history. His work was accompanied or has been supplemented by the studies and writings of such able historians as Professor Frederick J. Turner of Harvard, Professor Frederic L. Paxson of Wisconsin, and others who have shown that the Mississippi Valley, the plains, the Texas Panhandle, the Southwest, California or Oregon have as interesting history as the East and have just as many scenes or places of historic interest.

The people of the western states have not been slow to evidence realization of the great historic interest that accompanied the Westward flow of population and the ever changing location of the frontier. The many historical societies have encouraged research into the activities of the explorers, the pioneers and the early settlers and today the result is that those who truly understand American history give first importance to the remarkable manner in which the major part of the American continent was changed from a wilderness to thickly settled thriving areas in the short space of but two or three generations of the people who settled it. But, unfortunately, it seems most difficult to impart to the study of history adequate realization of the historical or economic importance of this thing still less the degree of interest that the subject yields when adequately taught to the student.

Dr. Riegel has taken a subject that would seem to contain unlimited space for interest and romance. He has tried to tell of the assistance to the development of the western part of this country that was given by the railroad. He has written a fairly scholarly history but beyond that little else. He has recited the facts of the building of the western railroads, told of their financial struggles and competitive strategy, and to some extent analyzed the problems that were common to all, and to that extent his book is a useful one. He has not succeeded in bringing out adequately the true economic significance of the coming of the railroad into the new country nor explained in satisfactory manner the effect that the railroad had in assisting settlement of this vast area much sooner and more extensively than would have been the case without it. And most unfortunately, he simply has not succeeded in making the work as interesting as the subject merits. He has not discovered the romance of western railroading. Railroads are just railroads to him—mechanical combinations of locomotives, bridges, ties and rail—corporations. He neglects the fact that they are also organizations of men—and that those who built the western railroad network—managers or employees—were pioneers who in many instances struggled against as great or greater odds as did those who crossed the plains in covered wagons, reclaimed the wilderness from the Indians or engaged in the be-

ginings of the West's commercial activity. In other words, Dr. Riegel has written a book and withal almost completely avoided the most interesting portions of his subject. It is the sort of history that is usually taught and not the sort that must be taught if history is to be made as interesting to the student as it deserves to be.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian,
Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Chemistry in Industry, Vol. 2, edited by Dr. H. E. Howe. This volume includes sections on railroad chemistry, aviation, industrial explosives, lubricants and paints, refrigeration, rust-resisting metals, and water supplies. 428 p. Illustrated. Pub. by Chemical Foundation, Inc., New York City. \$1.

New Zealand Railways Magazine, May, 1926. Vol. I, No. 1, of one of the newest railway magazines. Articles on administrative policy of the N. Z. Govt. Rys., biographical sketches of officials, organization, stores, shop organization, and notes from overseas. Lovers of locomotives will be especially interested in the "Josephine" of 1872, and the modern "Passchendaele" on p. 24 and 25. 48 p. Pub. by New Zealand Govt. Railways Dept., Wellington, N. Z.

Castles, by Charles Oman. History of castles in the territory of the Great Western Railway. Handsomely illustrated. Map of Great Western showing location of castles in pocket in back cover. 230 p. Pub. by Great Western Railway Co., London, England. 5 shillings.

Foundry Practice, by R. H. Palmer. Third edition. A textbook intended primarily for students, apprentices and molders. 432 p. Pub. by John Wiley, New York City. \$3.00.

The Fugger News-Letters, Second Series, edited by Victor von Klarwill. Selections from news letters written by correspondents of the House of Fugger in Augsburg, on business, transport and political conditions in the years 1568-1605, and presenting the Elizabethan Era from the point of view of business men, when an important transportation problem was the best sea-route to avoid Sir Francis Drake or Sir John Hawkins in the New World and the Turkish privateers in the Mediterranean. 353 p. Pub. by Putnam's, New York. \$6.00.

The Rise and Fall of Jesse James, by Robertus Love. Accounts of several famous train robberies are included in this biography. 455 p. Pub. by Putnam's, New York. \$2.75.

Periodical Articles

A Hundred Years of Railway Development, by R. Bell. These two papers outline, compare, and contrast railroad history in Great Britain and in America, the latter being primarily on American development. *Journal of the Institute of Transport*, December, 1925, p. 77-88, discussion, p. 88-95; June, 1926, p. 352-361.

Isaac I. Stevens and the Pacific Railroad Survey of 1853, compiled by Bertha L. Heilbron. "Judged by its influence on the development of Minnesota, perhaps the most significant expedition that passed through the future state during the middle of the 19th century was that of 1853 commanded by Isaac I. Stevens, for this party surveyed a route for a railroad which eventually was to connect the Northwest with the Pacific Coast." p. 127. *Minnesota History*, June, 1926, p. 127-149.

Latest of Our Great Bridges, by J. Bernard Walker. The Newark Bay Bridge of the Central Railroad of New Jersey described, with illustrations. *Scientific American*, July, 1926, p. 28-29.

Regulating the Railroads, by Frederick Hanssen. Present problems of importance, particularly bases of valuation. *Financial America*, June 12, 1926, p. 751, 765.

Steel-Making Minerals, by Josiah Edward Spurr. What they are, where they are found, and to some extent, how they reach the manufacturing centers, and their importance in our industrial life. *Foreign Affairs*, July, 1926, p. 601-612.

Letters to the Editor

[The RAILWAY AGE welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated. The editors do not hold themselves responsible for facts or opinions expressed.]

Are the Railways Wasteful in Their Use of Timber?

BALTIMORE, Md.

TO THE EDITOR:

In the *Railway Age* of May 15, page 1293, I have noticed an article by R. D. Garver entitled, "Cross Tie Requirements and Forest Conservation." This article impresses me as being more or less of an indictment of the railroads, the import of which would convey to the mind of the reader that the railroads are either decidedly delinquent or indifferent.

When it comes to cross tie specifications, possibly Mr. Garver is not familiar with the fact that during the period of federal control, not only was competent and thorough study given to the question of specifications, but many conferences were held with the producers and the railroads as users, out of which conferences there came an actual cross tie specification. It is interesting to note that this specification was not only adopted under federal control, but readopted after federal control by the greater percentage of the railroad mileage in the United States. Since that action, the specifications have been approved by various railroad, engineering and other similar organizations. These specifications are not only looked upon as reasonably correct, but as workable, not only in the interest of the user, but also of the producer. It can be stated that these specifications are generally in use.

Relative to the use of small cross ties, several facts may be noted. The specifications mentioned above take care of every part of a tree that can be legitimately produced or used as a cross tie. There are parts of a tree, especially near the top, which, on account of branches, knots and other conditions should not be and cannot be used, and there are other parts such as slabs, etc., which cannot be used, but which can be put into other marketable products. It is the problem of the producer to find a market for the side products.

The non-use of certain parts of a tree for cross ties is not generally chargeable against railroad delinquency. In this connection, the railroads have carried on a continuous effort against the cutting of trees which are too small in the beginning and should be allowed to grow. The railroads have taken steps, therefore, particularly in fixing the percentage of small to large cross ties which they will accept, to discourage the practice of cutting down the small trees. This cutting of small trees has produced more small cross ties in many territories than the railroads could possibly use.

Answering the question of the use of small ties in side tracks or where a small tie can be used, the engineering program, related as it is to necessary economy of practice and with particular reference to cross tie specifications, indicates conclusively that small ties are used where they can be used and very largely to the fullest extent that they can be used.

Referring to the question of the use of treatment ties, I believe that it can be stated with absolute accuracy of

fact, that the railroads of this country have made greater strides in the use of treated timber than has any other industry, and while there is opportunity for a still further use of treated ties, the practice of their use is being adopted very rapidly and to the extent that a service use of from 20 to 25 years is in sight in connection with not only the treatment of a tie, but its protection by tie plating, etc. Experimentally at first, but now to a larger degree, in that a method has been found which is not so experimental, hardwoods which could not be treated before as they would not take treatment, are now being prepared and treated and this practice will probably be extended.

When it comes to the question of the use of unsound timber or timber which is not fit for cross tie service, this question answers itself, in that the protection of traffic, avoidance of accidents, and considerations of economy, do not justify the use of unsound or improper timber under the rails. With those who are really familiar with the general cross tie situation comes the accurate knowledge that the steam railroads of this country are very much alive to the conservation of timber and are taking very active steps for conservation.

M. E. TOWNER,

General purchasing agent, Western Maryland.

No Economic Justification for Using Impaired Cross Tie Timber

BALTIMORE, Md.

TO THE EDITOR:

The consumers of timber and the timber conservationists have a true community of interest. Why then, it has been asked, do not the users put into practice the suggestions made by the conservationists? The one material which probably takes a larger proportion of the lumber cut than any other single item is cross ties. It is the one article too that has been more generally subjected to preservative treatment than any other. It is, in fact, responsible for such extension of the wood preservation industry as is found in America today,—constituting approximately three-fourths of the product of the treating plants of the country.

These facts do not furnish an excuse for "resting on the oars" and waiting for the users of other kinds of lumber to become equally progressive, for there are yet extensive fields in which the cross tie situation may be handled more economically, both as relates to the selection of timber and its preservation. There is, however, one element that more largely governs the policy in those respects than any other, and it should not be overlooked when means for further conservation of timber going into cross ties is being considered. That element is service.

The gradual but, nevertheless remarkable, extension in the average life of cross ties during the past 20 years is attributable to the adoption and use of numerous improved methods of protecting the timber. Chief of these is the preservative treatment. Of not much less importance is the care used in specifications for the selection and distribution of cross ties for the particular service they must give. Large returns have accrued to those carriers who have installed mills for pre-framing by adzing and boring prior to treatment, and also to those who have arranged facilities for protection by thorough seasoning and by the almost universal application of S-irons to avoid splitting. Further the adoption of heavy rail sections, the increased use of tie plates with large bearing area, and of anti-creepers of improved and heavier designs have in great part been inspired by the need for securing greater

service from that largest item of maintenance of way expenses—cross ties.

It would not be possible to state with accuracy just how many years of extended life have been attributable to each of these items, for they differ on various roads and in varying climates, and the line between their values in any one given location is not susceptible of determination. Costs of these means for increasing tie life, however, will indicate the relatively high expense of their adoption which, notwithstanding, has been fully warranted by the economies secured. A typical case involving a main track cross tie is:

	Treated	Untreated
Cross tie.....	\$1.15	\$1.25
Inspection, etc.....	0.03	0.03
Haulage	0.75	0.25
Adzing and boring.....	0.04	.....
Treatment	0.40	.....
Tie plating (2 plates).....	0.68	0.68
Installing	0.40	0.40
	<u>\$3.55</u>	<u>\$2.61</u>

The untreated cross-tie, with tie plate, in track lasting 9 years costs \$0.38+ per year. The treated tie, costing \$3.55 in track must give 14 years life of approximately 9 years is being secured from untreated ties, but an average life in excess of 14 years is being secured from the treated tie.

The latter provides the more economic procedure. It suggests the economies to be secured through the more general adoption of the measures which have prolonged life and by the more intensive development of practices which will insure maximum length of service. This means, first, that the timber must be free from defects which threaten to limit its service. Secondly, it must be handled through a proper seasoning period, so that the checking and splitting incident to its seasoning are limited to a minimum, to the end that no ties unduly green or impaired by over-seasoning shall be offered for treatment. Finally, the treatment shall be thorough, whatever be the process employed.

Many roads are now experiencing the removals of the treated ties of their installations twelve or more years ago. They are coming out by the hundred-thousands. The thing that probably surprises them more than this, is that many thousands of ties treated seven and eight years ago also are being removed. An analysis of the causes for such removals shows that they are not always due to mechanical injuries, splits and rail-cuts, but that decay (the defect which thorough treatment should prevent) is responsible in a measure equal to either of the other causes. As the preservatives used were known to be toxic, and ample quantities were specified, it is evident that the trouble was due either to defective timber or incomplete treatment.

It must be evident that it is highly uneconomic to spend \$3.55 for a treated tie with plates in track and secure but 7 or 8 years life. The nullification of forest conservation is in equal evidence. It is just as apparent that the way to avoid that situation is to maintain a rigid specification and to set up a standard of inspection that will supply timber without defect. Next there should be adopted a process of treatment known to be satisfactory and the provision of an organization with facilities that will insure complete and thorough preservative treatment.

The use of under-sized timbers for cross ties and those with defects (even minor ones) could result only in a decrease in service life and an ultimate retrogression in timber conservation. For timber with incipient fault such as molds, stains and other minor defects, there may be found uses in materials where milling will expose it and permit the removal and discard of decayed portions and thus forward the cause of forest utilization. Certainly, however, there can be found no economic justification

for the use of impaired timber in cross ties. Here, where the expense of handling, protecting and using the tie make the final cost in track three times the original purchase price, true economy and greatest ultimate conservation of timber will come from maximum length of service which can be secured only from high grade timber most thoroughly protected.

C. C. COOK,
Maintenance Engineer, Baltimore & Ohio.

Purchases and Traffic

CHICAGO.

TO THE EDITOR:

We are very much pleased to see in your issue of June 5 editorial entitled, "When Traffic Influences Purchases."

Outside of our personal interest in the matter we have long felt, as this editorial indicates, that the policy was a bad one for the railroads using it, even though they seemed for the time being to influence valuable traffic.

There is one point shown by our experience which you did not mention, viz., that railroads that give preference in their purchases on account of traffic, no doubt, drive to other roads a larger amount than they realize of traffic from shippers whom they do not patronize, of which they would otherwise get a portion themselves if they just left the traffic question out of their purchasing program entirely.

We have had the experience in this business of seeing our railroad trade become so much less desirable than formerly that we have naturally had to spread our lines in other fields. Whereas in periods from five to thirty years back we were constantly hunting for enough commercial traffic to properly repay roads that had already favored us with their business, and could in most cases give them but a small number of carloads in comparison to carloads of business that they gave us. We have found during the last year or two that our tonnage on the larger roads has run two or three times in carloads, the amount of business given us in the same period by the same roads. Because of the policy of those roads this has led to our taking special pains to divert from the roads that we felt were not treating us fairly on their purchases a considerable amount of tonnage that we would have otherwise given them, and given them gladly.

We have heretofore believed that both traffic and purchases should be handled on the basis of service rendered in each department, independent of the other, and it has been our policy where we were getting business from a railroad to reciprocate as far as we could with traffic, without any pressure from the purchasing line to make us do so. That situation we believe means real economy for all concerned in the handling of purchases and sales and in the soliciting of traffic as well.

LUMBER.

THE NEW YORK CENTRAL, in a period of 15 months has moved 270,745 cars of freight from industries on its lines newly established since January 1, 1925. These new industries aggregate 771 plants, scattered throughout the lines of the whole New York Central system.

THE BRITISH COLUMBIA GOVERNMENT has appointed three directors of the Pacific Great Eastern. These include W. J. Blake Wilson, vice president of P. Burns & Co., Ltd., Vancouver, B. C.; Chris Spencer, head of the firm of David Spencer, Ltd., Vancouver; and William Kitchen, a retired railway contractor at Vancouver. The other directors are the Hon. W. H. Sutherland, minister of public works, and the Hon. A. M. Manson, attorney general.

Grade Separation in Relation to City Planning

A suggestion for the revision of streets to reduce the number of crossings required

By John P. Hallihan
Consulting Engineer, Detroit, Mich.

TWENTY years ago railroad-highway grade separations were an unimportant item in the budgets of railroads and of cities. Today they have come to be one of the most costly items. What they may be tomorrow is worthy of serious attention from railroad managers and city administrators.

In 1905 highway travel in the United States was just commencing to take on a significant aspect. At the end of that year the total mileage of hard-surfaced roads in this country, excluding city pavements, was 161,000. The total number of automobiles in use was 78,000. Most of the traffic was local. Inter-city and inter-state traffic were as yet inconsequential in volume. The possibilities for

this great road traffic has become of equal or greater moment to the railroads. The protected grade crossing that satisfied the former infrequent traffic on country roads is not sufficient for a continuous stream of traffic. The delays, dangers and accidents incident to grade crossings are so multiplied by the increased volume of travel that there has come an insistent and widespread demand for the removal of grade crossings by a separation of railroad and highway grades, not only on main-traveled roads but on all roads.

The policy of the railroads with respect to highway grade separations has always been a defensive policy. The legislative bodies of cities and counties, reflecting

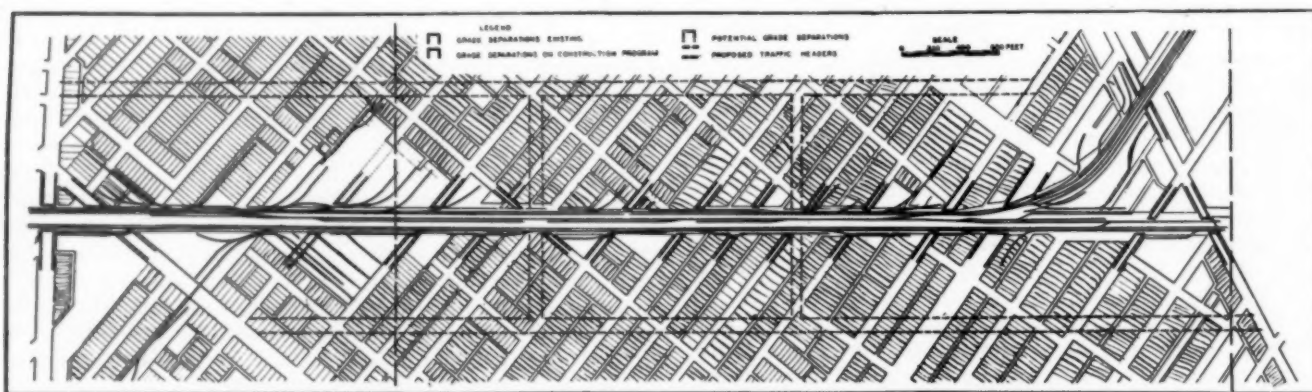


Fig. 1—A Typical Mile of Railway Line in a Developed City, Showing a Portion of the Grades Separated

individual transportation that existed in the combination of concrete roads and dependable power vehicles were not yet fully visualized.

In 1925 the total mileage of improved roads in the United States had risen to 495,000 and the total number of automobiles to 20,000,000. In other words, instead of one motor car to every two miles of improved road as in 1905, we now have 40 motor cars for each mile of improved road. In 20 years, although we have spent \$6,000,000,000 in improving roads we have only multiplied our improved road mileage by three, while the road-using public has multiplied its ownership of automobiles by 248 and the investment in this medium of individual transportation now amounts on a depreciated basis to approximately \$6,000,000,000. Again, while we are now spending \$700,000,000 per annum in the construction of new roads the annual purchases of automobiles have reached \$2,000,000,000 or nearly three times the annual expenditure on roads for their use.

This new freedom of movement in individual vehicles has created a traffic on city streets that, in many places, already exceeds the capacity of existing street systems. The suburban and inter-city and inter-state traffic on country roads has correspondingly increased in volume.

In thus creating a new problem for cities and counties

the pressure of the public, have in recent years demanded a program of expenditure beyond the capacity of the railroads to finance and in consequence the burden of effort of railroad officers has been to resist this pressure and to keep the construction program within the budget limits of their respective lines. Consequently there has been no time or disposition on either side to view the problem in its broader aspects. The present and future importance of the subject to both the public and the railroads requires, however, that both take the time necessary to consider the problem from the economic viewpoint and to adopt a constructive policy in its solution. The public has come tardily but finally to a realization of the fact that man-and-horse standards are obsolete and cities are now planning highways of a width that will admit future separation of street grades for motor traffic alone. In this study of the revision of street systems to meet the requirements of motor traffic the railroads should participate actively to the end that due consideration may be given to the protection of railroad and industrial interests.

The Relation of a Street System to Industrial Areas

Most cities in the interior of the United States have grown up from railroad stations. Their growth has been

controlled by circumstance without the aid of a definite plan. There has been no segregation of industrial and residential areas but in the natural course of growth the industries, dependent entirely upon the railroads for the delivery of raw materials and the dispatch of manufactured products, have taken positions alongside the right-of-way and in their expansion have displaced the residential areas first established.

Unfortunately this process has taken place without adjustment of the street system to meet the new conditions and in consequence great sections of industrial territory have either become, by vacation of streets, complete carriers to all highway traffic for long distances, or, by undue retention of street openings, areas adjacent to railroads are found cut through by from 12 to 20 streets per mile and made undesirable for the more important industrial uses. In both cases the city loses taxable values that would be created if the property adjoining the right-of-way of the railroad were definitely set apart for industrial use and delimited, by parallel thoroughfares at reasonable distance from the railroad, from the adjoining residential area, thus rendered equally safe from intrusion by industry. Under such circumstances openings under the tracks could be adjusted in number to serve the traffic

from four to eight tracks in this section. The existing grade separations have been built at various times during the past 25 years, and their combined cost, as nearly as can be ascertained from the records, is \$560,000. The cost of the seven separations now in progress will approximate \$1,023,000; the remaining potential crossing will cost \$140,000; and the final cost for the mile will be about \$1,723,000.

At the present time the cost of adjusting the street system on each side of the tracks by the creation of 86 ft. traffic headers so as to make the industries more accessible, plus the cost of installing two additional grade separations required for a reasonable spacing of openings in addition to those already constructed, would be \$2,084,000; adding the amount (\$560,000) already spent brings the total cost under this second plan to \$2,644,000. Apparently in this difficult and crystallized situation, rearrangement and betterment is not possible at a justifiable cost. If we consider, however, that all the property area affected by the revision of the street system as indicated would be greatly benefited and could readily absorb one-half of the cost of such revision, on the usual assessment basis for similar improvements, we find that even at this late date the revision of the street system in this

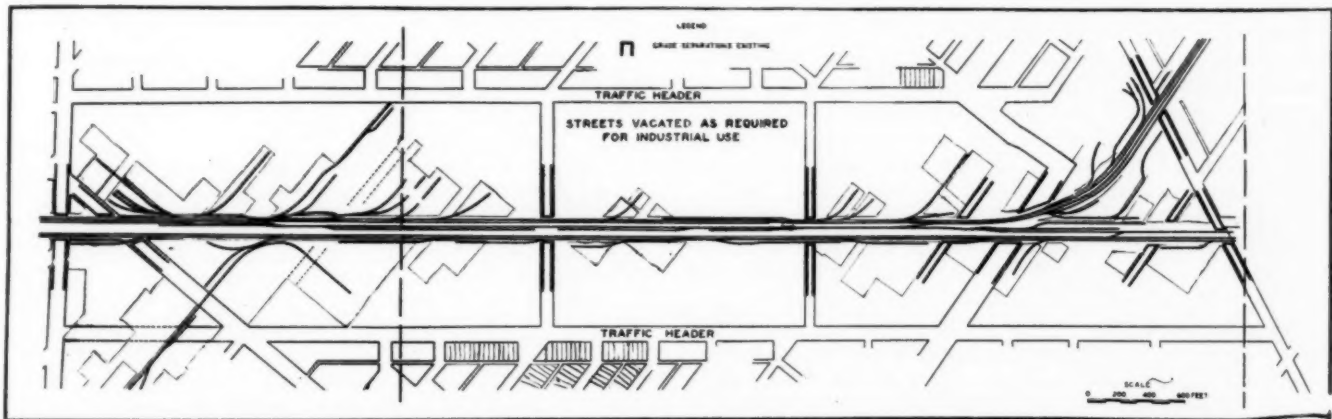


Fig. 2.—The Same Mile of Line as in Fig. 1 After the Readjustment of Streets to Reduce the Number of Grade Separations

needs of the district and in position to conform to the general thoroughfare plan of the city and to the principles of economic location.

Districts of mixed residential and industrial character adjoining railroads are frequently found in the heart of cities where the railroad tracks and structures may easily represent an investment of a quarter of a million dollars per mile potentially available for industrial service, but deprived of the opportunity to render such service in the most desirable locations because of the fragmentary character of the territory left available for industrial use. In such situations streets that now dead-end against the tracks or that are allowed to cross at grade under hazardous conditions become, by reason of the present demand for more street space and greater safety, potential grade separations, and if all are cut through the effect will be to lose the reserve industrial territory required for the future needs of the city and to create further blighted areas. It is frequently possible, however, by adequate planning to avoid further injury to such districts, generally of great potential value.

A typical instance illustrating the result of present practice is shown in Fig. 1 which illustrates a section a mile in length in developed city territory where there are already five grade separations and where seven grade crossings are on the present program for separation and one more of the remaining five streets is subject to separation, a total of 13 openings in this mile. There are

section is almost as economical to the city at large and to the railroads as the construction of the remaining potential grade separations, and will have the advantage of leaving the entire section in usable condition. Figure 2 shows the situation as it would be in this section after the suggested readjustment. A comparison of costs under present practice and as suggested in connection with street revision is given below.

Costs Under Present Practice

Cost of grade separation in a typical mile of developed industrial territory. (Fig. 1) with a complex street system, no streets parallel to railroad but all crossing at angles of about 45 deg.

Number of streets involved	17
Number of Separations required	13
Constructed (1900-1925)	5
On program to be constructed	7
Potential and probable separations	1

Cost of 5 grade separations already constructed	\$560,000
Estimated cost of 7 grade separations on construction program	1,023,000
Estimated cost of one potential grade separation remaining (street 60 ft. wide—6 tracks	140,000
	<hr/> \$1,723,000

Cost Under Proposed Plan

Estimated cost of grade separation in developed territory shown on a typical mile (Figs. 1 and 2) in connection with revision of

street system to create traffic header streets 86 ft. wide on each side of and parallel to the railroad and 600 ft. distant from the right-of-way on the premise of constructing the remaining grade separations at approximately quarter-mile intervals only.

Cost of revision of street system on basis of full valuation of land and buildings in two miles affected	\$1,737,000
Cost of two new grade separations	447,000
	<hr/>
	\$2,184,000
Cost of five separations existing	\$ 560,000
	<hr/>
	\$2,744,000
Deduct one-half of street revision cost applied on benefited property	869,000
	<hr/>
	\$1,875,000

Net cost to city and railroad under street revision plan 1,875,000
Or but 10 per cent in excess of the \$1,723,000 required to complete the plan already under way which necessarily must proceed with the street system as it now exists.

Where the street system is revised prior to the construction of separations the grade separations may with reason be reduced to a maximum of four, at approximately quarter-mile intervals if the traffic space is adjusted accordingly. Perhaps, as these problems are considered more from the economic viewpoint than that of custom and precedent, it may become possible to have pedestrian passages at the quarter-mile points and vehicular traffic passages at the half-mile points only, or but two vehicular openings per mile. Traffic would not suffer by such revision for at the usual permissible speed of 15 miles per hour for heavy trucks, a truck coming to the traffic header at the quarter-mile point between separations would require only two minutes to detour via the half-mile opening to arrive at a corresponding point at the traffic header on the other side of the tracks. Ordinary automobile traffic would probably not consume more than 1½ min. or less than a minute in excess of the time taken up by the usual stop under the stop-and-go signals. The location of fire-engine houses and of public schools would measurably govern the location of the crossings.

Possible Economies

Alterations of street systems do not appeal to the public as measures of economy for the reason that they disturb existing property and business arrangements. The economies and betterments possible by the adjustment of street lines to fit the conditions of use in territory pre-eminently industrial, prior to determining a program

of grade separations are, however, worthy of attention from all concerned, including the householders in the residential area directly affected by the readjustment.

In sections where there are as yet only grade crossings, with territory only partially developed and generally of minor importance, the advisability of adjusting the street system to delimit the industrial areas before determining the number and position of the grade separations, is supported by very material economies. A typical situation of this character is shown in Fig. 3. Here the street revision is simplified because the streets meet the railroad at nearly right angles and the location of a parallel thoroughfare or traffic header affects less property.

The estimated cost of the recommended plan of grade separations by the revision of the street system to provide traffic headers (Figs. 3 and 4) at about 600 ft. distant from and parallel to the railroad, permitting the limitation of grade separations to four per mile in city territory of average industrial and residential development, is as follows:

Cost of revision of street system on basis of full valuation of land and buildings affected, including cross connections between traffic headers	\$526,000
Cost of four grade separations at one 120-ft., one 86-ft. and two 66-ft. streets respectively, all six-track crossings.....	577,000
	<hr/>
	\$1,103,000
Less one-half of \$526,000 to be assessed on benefited property	263,000
	<hr/>
	\$840,000
Net cost to city and railroads.....	\$840,000
Comparison of Recommended Plan with Present Practice	
Present Practice. Cost of 12 grade separations in one mile of developed industrial territory, assuming all streets to be 60-ft. streets crossing 6 tracks.....	
	\$1,680,000
Recommended Practice. Cost of recommended plan of four grade separations per mile with revision of street system to provide adequate traffic headers on both sides of railroad...	
	840,000
	<hr/>
Difference in favor of recommended plan....	\$840,000

Division of Cost

It has been the practice heretofore to divide the cost of grade separations between the railroads and the community in such manner that the city pays all the abuttal damages plus an agreed proportion of the construction cost.

Under the recommended plan it is clear that both

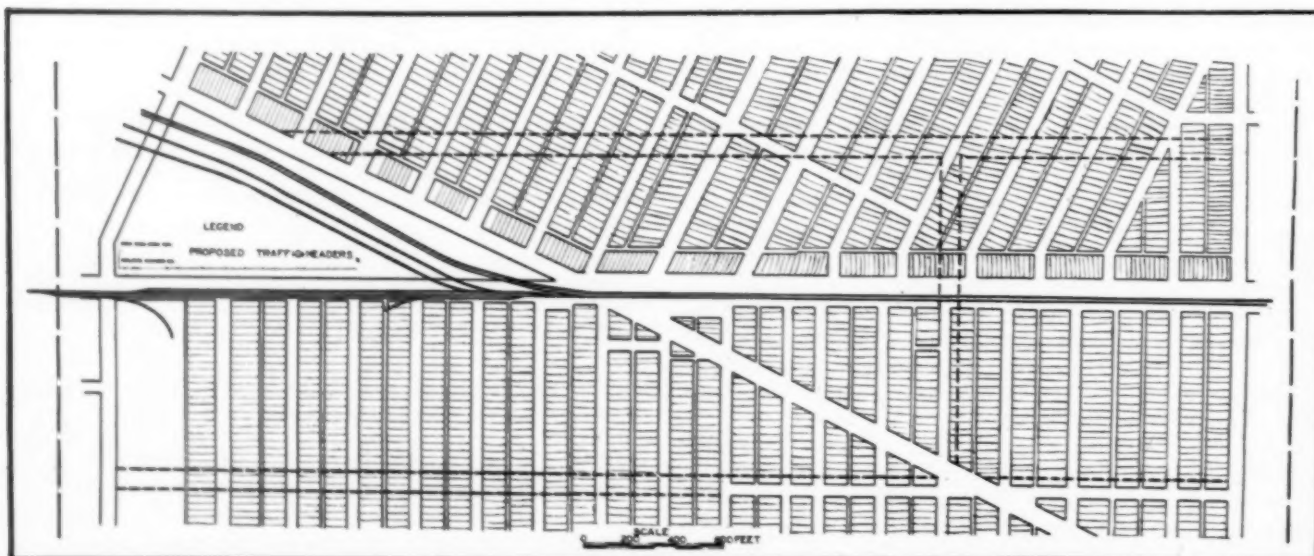


Fig. 3.—A Simplified Revision of the Street Arrangement with Parallel Thoroughfares or Traffic Headers

parties are benefited and it will not be seriously disputed that the benefits are divided in fairly equal measure. It is conceivable, however, that there may be two general cases.

(1) When the street revision and grade separation are accomplished simultaneously: Under these circumstances it would seem equitable (in view of the greater expenditure assumed by the city to the end of lessening the cost to the railroads) to lump the net costs to the city and railroad and share them equally.

(2) When the city compels dedication of traffic headers by original subdividers or creates traffic headers in advance of intensive use and requirement of separation of grades, thus protecting the industrial territory and reducing the ultimate cost to the railroads. Under these circumstances it would seem proper that the railroad should pay the greater proportion of the cost of the two primary necessary separations, viz., those at mile and half-mile intervals. In the event that separations are later found desirable also at the quarter-mile points, the cost may be divided equitably between the railroads, the

should be discouraged because it forces industry farther afield where the transportation and other services of the city must follow at a greater cost to the community.

Conclusions

The present practice of providing grade separations in cities on nearly every street produces a great economic waste. It is a form of waste that works progressive injury on the community as the situation created becomes crystallized with the passage of time and the growth of cities.

Cities are created by industry. The handmaiden of industry is transportation, and the railroad is the most important element of transportation. Whatever adds to the cost of this element adds also to the cost of food products and manufactured articles and in the last analysis is borne by the community.

This particular form of waste is consequently of more than local interest. If we consider that a possible saving of \$500,000 to \$800,000 per mile of right-of-way in city territory as indicated herein is applicable in greater or less

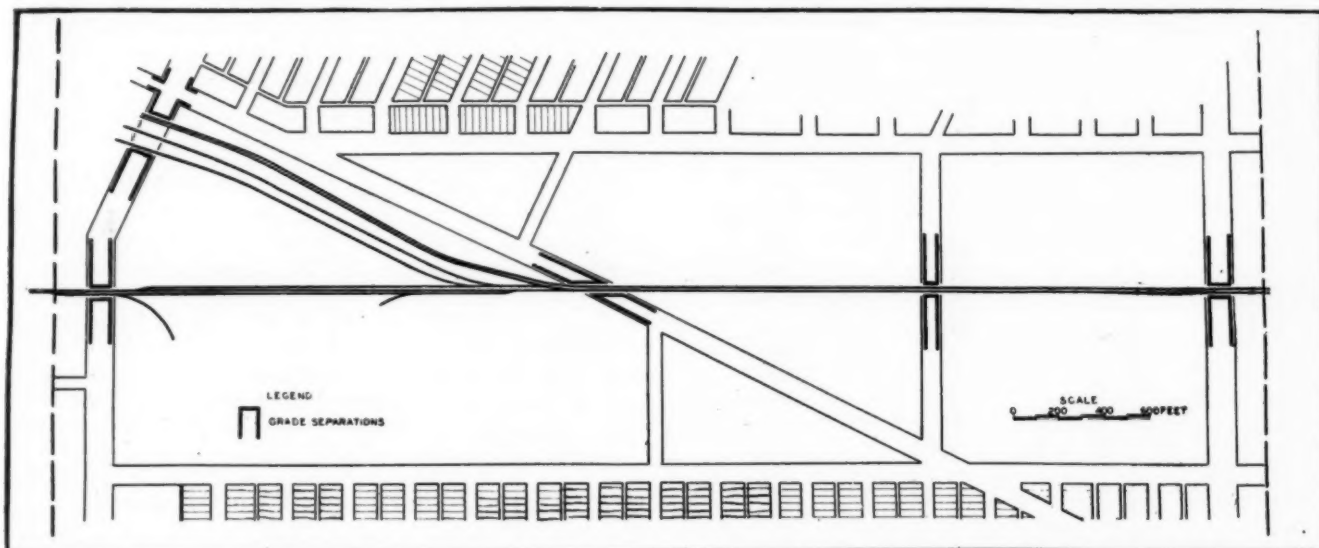


Fig. 4.—A Further Simplification of Fig. 3, Indicating the Allocation of Property Adjacent to the Railway for Industrial Purposes

city and other parties benefited, in proportion to the benefits derived.

Beneficial effects are felt very quickly where industrial territory is provided with adequate connections to the main thoroughfare system that at the same time protect it from unnecessary street intrusion. A traffic header parallel to a railroad is a most effective zoning device, provided it is sufficiently distant from the tracks to afford room for service tracks for an industrial plant of the first class. A distance of 1,200 ft. agrees with the consensus of railroad opinion as a reasonable distance in original design for such a thoroughfare in new territory.

Under conditions where there has been no attempt to guide development, industrial territory in cities is generally found to occupy a strip no more than 600 ft. wide on each side of the tracks but this width is not enough to permit expansion of the average manufacturing enterprise and as created merely represents the cramping effect of residential interference.

A city can better afford as it expands to segregate its industrial territory and permit it to lie idle for a term of years rather than to find itself without desirable space for new enterprises seeking permanent locations. Platting of territory alongside railroad right-of-way for residential purposes is not in the interest of the community and

degree to all cities, the amount of money involved is of sufficient magnitude to make the subject of national concern.

It should invoke a closer relation of thought between railroad and industrial interests and city authorities to the end that while the latter are revising street systems to fit the immediate problem of making provision for a constantly increasing volume of motor traffic, the equally urgent necessity of conserving and bettering the railroad and industrial position may not be overlooked.

The railroads should abandon their defensive policy and join the cities in working out a constructive plan to realize the economies that depend only upon joint action in the common interest.

But one phase of the subject has been mentioned in this article and that very largely from the city planning point of view. Other phases will no doubt suggest themselves to railroad officers, notably, the possibility of consolidating the industrial service in cities and abandoning independently-owned tracks not returning revenue sufficient to warrant separation of grades. The railroads cannot separate themselves from other sections of the community in point of obligation to assist in the study of the common problem presented by the constant increase in motor traffic.

Divided Basket Bunkers Save Ice

Comparisons with bunkers of U. S. Standard refrigerator car show 15 to 16 per cent less meltage for same cooling effect

DURING 1923 and 1924 tests were run by the Bureau of Plant Industry, United States Department of Agriculture, to compare the performance of refrigerator cars of the so-called United States standard type, built following recommendations of the United States Railroad Administration, with that of a car of similar type except that the wire basket bunkers were divided by vertical air spaces which effect some reduction in the ice carrying capacity and a considerable increase in the ice surface exposed to the air circulating through the bunker. The bunkers in this car are essentially of the type briefly described in the article in the *Daily Railway Age* of June 12, 1926, page 1708, which dealt

contact with the ice. The cooled air slowly drops to the floor of the bunker and issues therefrom into the loading space, where it is brought in contact with the load and again slowly rises as it becomes warmer and passes through and over the load back into the bunker. Under these conditions the movement of air is exceedingly slow, and in order to accelerate it and to obviate the possibility of any obstruction that would block it, great care must be exercised in the construction of the car.

Not until the year 1918 was any attempt made to standardize the refrigerator car. In that year, as a result of the efforts of the United States Department of Agriculture in co-operation with officers of the railroads and refrigerator-car lines and of car builders who were attempting to find the best methods of handling, storing, and shipping fruits and vegetables, the United States Railroad Administration issued recommendations for what is now known as the United States standard refrigerator car.

Most of the refrigerator cars built or rebuilt since this type of car was recommended do not comply with the United States standard specifications in all details, but the essential features—adequate insulation, basket bunkers of sufficient ice capacity to cool the load properly, insulated bulkheads with openings at top and bottom large enough to allow free air movement in and out of the ice compartment, and floor racks of sufficient height from the car floor to allow an easy unrestricted flow of air under the load—are generally recognized by car designers and embodied in their plans.

Installation of Wire-Basket Bunkers

The cars of the United States standard design are equipped with wire-basket bunkers (Fig. 1) fastened to nailing strips and placed about 2 in. from the side and end walls, the ice being supported by either a metal or heavy wooden grate placed a short distance from the bottom of the compartment. Most cars so equipped are provided with a solid insulated bulkhead having an opening of about 12 in. at the bottom and 14 in. at the top. The space between the ice receptacle and the car walls permits the free movement of air over almost all of the outer surface of the ice in the bunker.

The wire-basket type of bunker has proved its efficiency, but in the repeated attempts of car designers to improve the construction and efficiency of refrigerator cars another form of bunker, known as the divided wire-basket bunker (Fig. 2), has been devised. It embraces the features of the United States standard type but in addition has a series of divisions, or flues, for the purpose of decreasing the ice capacity and increasing the meltage surface as the ice melts. The bunker is divided into four distinct sections by a main partition placed parallel to the longitudinal axis of the car, consisting of two sections of heavy wire netting 4 in. apart extending from top to bottom of the bunker and two smaller partitions placed parallel to the main partition but extending only about two-thirds the height of the bunker.

These secondary or intermediate partitions are of a construction similar to that of the main partition (Fig. 3). They act as flues and allow air circulation around more of

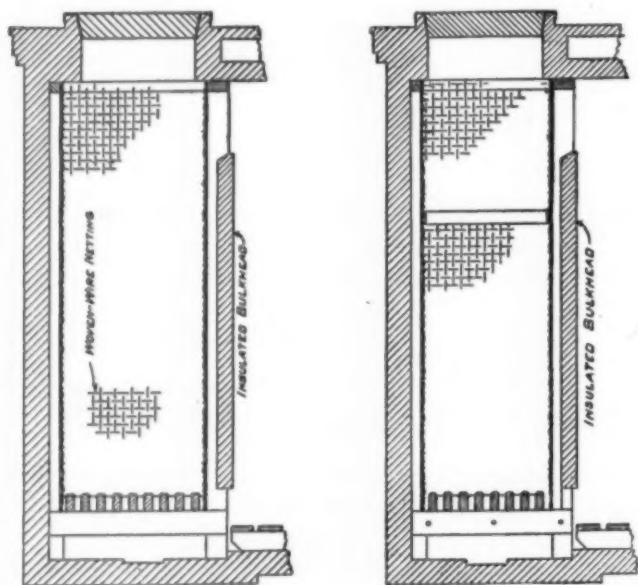


Fig. 1—Cross Section of Standard Wire-basket Bunker

Fig. 2—Cross Section of Divided Wire-basket Bunker

with the Union Refrigerator Transit Company cars tested in meat service between Ottumwa, Iowa, and New York. The report of the tests in fruit carrying service has recently been published by the Department of Agriculture in Department Bulletin No. 1398, which was prepared by R. G. Hill, associate horticulturist; W. S. Graham, junior physiologist; R. C. Wright, associate physiologist, and George F. Taylor, associate biophysicist, office of horticulture, Bureau of Plant Industry. The following article describing these tests is an extended abstract of this bulletin.

The Car-Cooling Problem

Although the designers of refrigerator cars for fruit and vegetable service differ in opinion as to the kind of ice bunker to be installed, all recognize the fact that the cooling of a refrigerator car is entirely dependent upon gravity for the circulation of air within it. This circulation is brought about by the cooling of the air as it comes in

the ice than is the case with the United States standard type of recommended bunker construction.

Results of Test Trips

As a means of determining the comparative performance of the two types of bunkers, two test trips were made, using two cars of identical construction for each test except that one was equipped with the wire-basket and the other with the divided wire-basket bunker. The first test was made in September, 1923, from the State of Washington to Chicago, and the second, from Florida to New York City, in June, 1924. Both tests were made possible

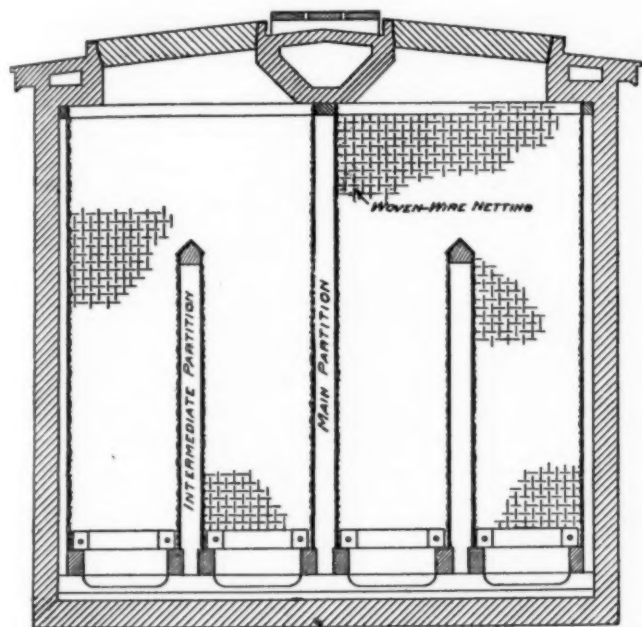


Fig. 3.—Location and Proportions of the Main and Intermediate Partitions in the Divided Basket Bunker

only through the co-operation of the shippers, railroads, refrigerator-car lines, and receivers. The insulation in the cars was massed and was similar on all surfaces, and both cars were equipped with floor racks and wood roofs. The ice capacity of the divided wire-basket bunker car was 7,400 lb. and that of the wire-basket bunker 10,400 lb.

The cars were loaded with apples for the first and with oranges for the second test. Early on September 16, 1923, the cars were pre-iced at Othello, Wash., loaded for the first test at White Bluff, Wash., and consigned to Chicago. The temperature of the apples loaded into the divided wire basket bunker car was 78 deg. F., and that of the fruit in the wire basket bunker car, 70.5 deg. F. In the following discussion of both tests, the divided wire basket bunker car will be referred to as car *A* and the wire basket bunker car as car *B*. The differences in the temperature of the apples in car *A* and car *B* were due to the fact that the fruit in car *A* was packed and loaded at once, while that in car *B* had been held in the packing house storage room which had been kept cool by sprinkling.

The first re-icing was made at Othello, Wash., on September 17, and the last at La Crosse, Wis., on September 24. Early in the morning of September 25, Car *B* was diverted. Car *A* arrived in Chicago at 6 a.m. the same day. The total quantity of ice supplied during the first test, including the pre-icing, was 20,680 lb. for car *A* and 24,740 lb. for car *B*, or a total saving of ice in favor of car *A* of 4,060 lb.

At the termination of this test, the cars were released for regular road service, and were not recalled until June,

1924, when they were sent to Florida to be tested the second time. On June 9 the cars were pre-iced at Haines City, Fla. The following day car *A* was loaded at Winterhaven, Fla., and car *B* at Florence Villa, and both were consigned to New York. The temperature of the fruit placed in car *A* was 87 deg. F. and that in car *B* 79.5 deg. The fruit in car *A* was freshly packed when loaded, but that in car *B* had been held in a packing house.

The first re-icing was at Lakeland, Fla., and the last at Potomac Yard, Va. The total quantity of ice supplied during this second test, including pre-icing, was 19,457 lb. for car *A* and 23,091 lb. for car *B*, or a total saving of 3,634 lb. for car *A*. The measured ice capacity of the bunker of car *A* is 3,100 lb. less than that of car *B*. In the first test, car *A* not only saved this difference, but 960 lb. in addition, while in the second test it saved 534 lb. more than this difference.

Temperatures Maintained

The basis for comparison of the temperatures maintained is the actual temperature of the fruit at the top and bottom layers of the load at the doorway, at the bunker, and in the middle layer at the quarter length of the cars. In addition, the average fruit temperatures of the top and bottom layers of the load are considered. The positions in the cars at which the temperatures were taken are the same in both tests and are in a vertical plane, equally dividing the car longitudinally. The initial readings shown on the accompanying charts (Figs. 4 to 7) are the fruit temperatures at the time of loading.

Fig. 4 compares the temperatures maintained in the

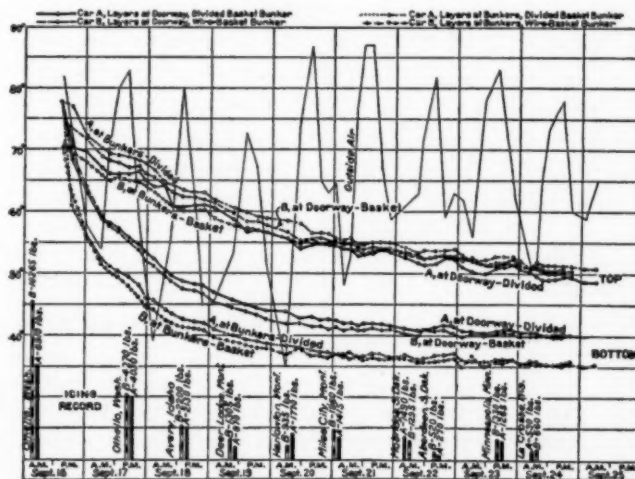


Fig. 4.—Fruit Temperatures, First Test, at the Top and Bottom Layers of the Load, at the Doorways and at the Bunkers

top and bottom layers at the doorway and bunker. Inasmuch as there is not so large a difference between the top and bottom layers at the doorway of car *A* as between the top and bottom layers of car *B*, the record is in favor of car *A*. Car *B* registered a temperature one degree lower at the bottom layer at the doorway than car *A*, but car *A* was cooler at the top layer by about two degrees.

At the top and bottom layers at the bunker, car *A* maintained a slightly higher temperature than car *B*. However, the greatest difference was noted in the top layer during the first five days. A greater fall occurred in car *A* by midnight of the first day than in car *B*, but the latter fell slightly lower than car *A* and maintained a gain of approximately 2 deg. throughout the trip.

Attention must be called to the initial fruit temperature

at loading. The temperature of the fruit loaded in car *A* averaged 78 deg. F. and that in car *B* 70.5 deg. Consequently, the fruit in car *B* had the advantage of being 7.5 deg. cooler at the beginning of the test. Had this initial temperature been the same, then in all probability the two cars would have shown the same temperature at the top layer, but car *B* would have been approximately 5 or 6 deg. higher at the bottom layer during the first few days of the trip.

Again, the difference in temperatures between the top and bottom layers at the bunkers is generally greater than between the top and bottom positions in other parts of refrigerator cars. This difference is more marked where the air circulation becomes choked through poor construction, faulty loading, or the shifting of the load. When the air is blocked at the bottom of the bunker, the packages adjacent to it receive the full benefit of the cold air, while those at the top of the load remain comparatively warmer. The type of construction at this point plays an important part in air circulation within the car.

Fig. 5 shows the record of the temperatures maintained at the middle layer, quarter length. The curves for cars *A* and *B* are practically the same, but if the initial fruit temperatures had been the same, that for car *A* might have been slightly lower. Car *A*, however, records a more rapid fall in temperature than car *B* up to midnight of the first day and overcomes the disadvantage of the warmer fruit with which it was loaded.

To understand fully the actual work done in cooling the load, consideration should be given not only to the temperatures maintained within the car at various positions, but also to the average temperature of the lading.

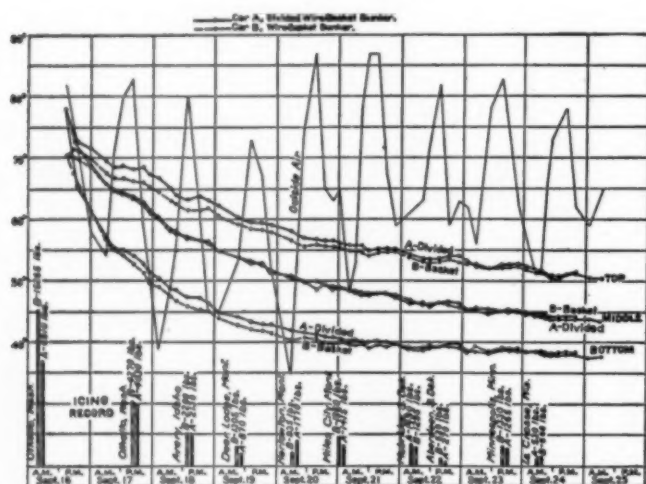


Fig. 5—Average Fruit Temperatures, First Test, of the Top and Bottom Layers, and the Fruit Temperature of the Middle Layer at the Quarter Lengths of the Cars

Although this temperature is not so important as it might appear, it aids in determining the actual performance, particularly if the individual temperatures are given due weight. The average temperatures for the top and bottom layers are shown in Fig. 5. The curves show a little difference, but the effect of the higher initial temperatures is readily seen. It is reasonable to make allowance for this factor by assuming that in so far as the average temperatures are concerned, Car *A* and car *B* are equal in performance.

Fig. 6 shows the fruit temperatures maintained at the bunker and doorway positions on the top and bottom layers in the second test. The temperatures in car *A* at the bunker were slightly higher in both the top and bottom positions than those in car *B*, although the initial fruit temperature was 7.5 deg. higher than in car *B*. The cars

show a parallel and abrupt drop in temperature from the time of loading until midnight of the first day, when the drop begins to steady and the curve flattens out. The difference between cars *A* and *B* at 6 a.m. of the second day was 7 deg., approximately the same as that between the initial fruit temperatures, and very slowly diminished, until on the last day the temperatures were practically the same. At the top position a more general cooling is seen, but from the beginning of the test until about noon of the third day there remained a difference of 7 deg. This difference diminished slowly, but remained marked at the end of the trip. Both cars had practically the same

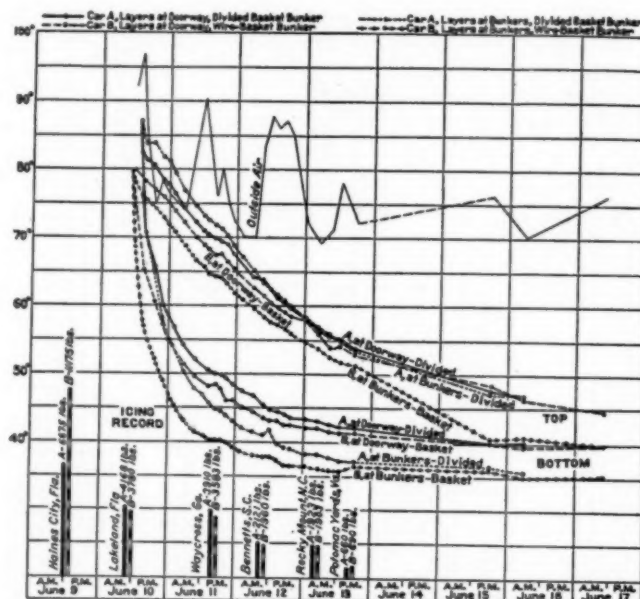


Fig. 6—Fruit Temperatures, Second Test, at the Top and Bottom Layers of the Load, at the Doorways and at the Bunkers

temperature until the last reading, when car *A* showed a slightly lower temperature. At the top doorway position, car *B* showed an average about one degree lower than car *A*. On the bottom position at the beginning of the trip the fall in temperature was sharp and may be favorably compared with the drop in the bottom position at the bunker. Car *B* registered the lowest temperature throughout the trip. The temperature differences are so slight, however, that when the initial fruit temperatures are considered, the performance of the cars may be regarded as equal.

Fig. 7 shows the temperatures recorded for the middle layer at the quarter length and the average fruit temperatures of the top and bottom layers of the load in the second test. The middle layer at the quarter length is particularly hard to refrigerate, because of the difficulty in getting adequate air circulation at this point. At the beginning of the trip, car *A* was about three degrees higher than car *B* at this position. The difference gradually diminished, however, until the early morning of the third day, when the temperature of the cars was practically the same at this point. At the end of the trip the temperature of this position in the load had been reduced in car *A* 45 deg. and in car *B* 37 deg. from the time of loading to 8 p.m. on the sixth day, a period of approximately 5½ days. The cars may be regarded as equal for performance at this position, consideration, of course, being given car *A* because of the warmer fruit with which it was loaded. Comparing the curves in Fig. 6, it will be seen that the cooling of the load proceeded rapidly in all cases. At the bottom bunker position, the temperatures were below 40 deg. F., approximately 48 hours after loading. In the same period

at the bottom doorway position they were below 45 deg. F. During this time the flattening of the curves are apparent and still indicate the lowering temperature. If a comparison of the temperatures at the top bunker and top doorway positions is made, it will be seen that there is but a slight difference, those at the doorway falling still within the temperatures at the bunker. There is, however, a slight difference in the range of temperatures at the top positions. Those in car *A* are practically the same as those in car *B* at the doorway, which is only one degree lower, while at the bunker there appears to be an equal range between the cars, which would be readily seen if it were possible to superimpose the curves shown in Fig. 6.

The average fruit temperatures of the top and bottom layers of the cars (Fig. 7) show a marked similarity. If it were possible to place the initial temperature at loading at the same starting point, this similarity would be more marked and would in all probability show the performance of car *A* to be superior to that of car *B*. Both cars show a

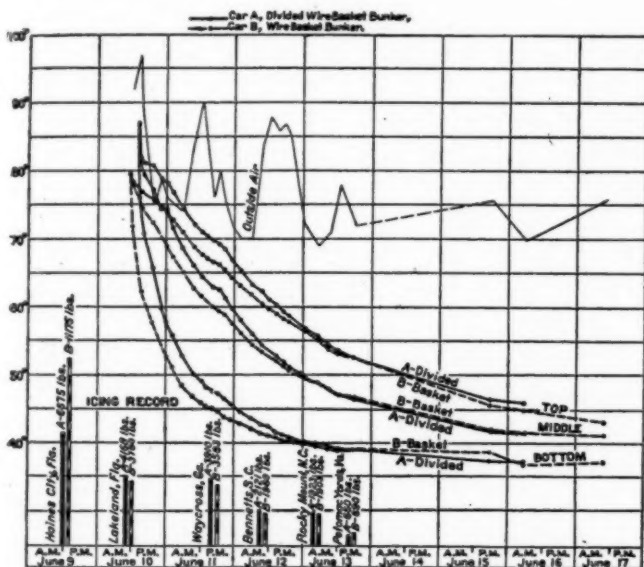


Fig. 7—Average Fruit Temperatures, Second Test, at the Top and Bottom Layers, and the Fruit Temperature at the Middle Layer at the Quarter Length of the Car

very abrupt fall from the initial temperature, car *B* being very slightly slower in cooling its load in the bottom position, but the temperature in car *A* lagged somewhat and 24 hours after loading was two degrees higher than car *B*. At midnight of the third day there were practically no differences in temperature at this position in the two cars. At the top positions a similar relation was found in the same length of time. Car *B* showed the lower temperature and car *A* the higher, with an average difference of only about one degree.

A study of the average fruit temperature of the middle layer discloses that the difference between cars *A* and *B* averaged only about one degree throughout the trip. The rather remarkable fact is also apparent that no difference exists between the average temperatures and those maintained in the middle layer at the quarter length, which alone would indicate a striking uniformity in the performance of the cars. From the foregoing discussion of the temperatures maintained by the cars on the second trip it would seem that such differences as exist are so slight as to be negligible from the viewpoint of practical transportation. At the time of unloading at market destination a careful inspection was made of the test boxes of fruit. Only one decayed specimen was found in car *A* and no decay whatever in car *B*.

The efficiency of a refrigerated car is largely determined by its ability to reduce quickly the temperature of a warm load to a relatively low point and to maintain it until the arrival of the car at its destination. Not only must the car be rated for efficiency upon the temperature maintained within it but also upon the comparative quantity of ice it melts in producing these temperatures. Refrigeration can not be obtained without ice meltage, but it is not necessarily true that the car which melts the most ice is the most efficient. However, if the car is in good condition and the temperature of the commodity at the time of loading is taken into account, ice meltage will be some indication of the comparative performance of the car.

In the two tests under discussion the car equipped with the divided wire-basket bunker maintained temperatures equivalent to those in the car having the United States standard type of wire basket. Not only does this demonstrate its efficiency in cooling, but it also shows its economic value in its lesser ice requirement. In the first test, car *A* was supplied with 4,060 lb. and in the second test with 3,634 lb. of ice less than car *B*, which may be considered a direct saving in ice meltage and a saving not made at the expense of the cooling efficiency of the car.

L. & N. Train-Control Installation Approved

WASHINGTON, D. C.

THE Interstate Commerce Commission, Division 1, has issued its report on the installation of the two-speed continuous induction train-control system of the Union Switch & Signal Company on the Knoxville division of the Louisville & Nashville, finding that it meets the commission's requirements except as to certain points indicated. Requirements are prescribed in respect of certain apparatus and operations with which the carrier is expected promptly to comply.

The report says in part:

The installation inspected and tested was completed on December 10, 1925. It extends from Corbin, Ky. to Etowah, Tenn. 162 miles single track. There are 47 locomotives equipped. In May, 1925, a preliminary inspection was made on a 17-mile section, with five equipped locomotives. At our request the carrier has furnished figures showing the cost of the completed installation as follows:

1. Total cost of roadway equipment of train control installation, less power lines and power apparatus, and less signals and cost of change in existing signal system, less salvage—\$90,209.37.
2. Total cost of power lines and power apparatus, less salvage—\$78,503.53.
3. Total cost locomotive equipment installed—\$150,107.24.

Total Cost—\$318,820.14.

An absolute permissive block system of automatic signaling is in use on the division. The signals are normal clear, three-position upper-quadrant signals mounted on concrete foundations. Red, Yellow, and Green are the night indications for Stop, Caution, and Proceed, respectively.

Between Corbin and LaFollette, 52 miles, the signals are U. S. & S. Co., Style S, installed in 1912; between LaFollette and Etowah, 110 miles, they are G. R. S. Co., model "2 A" installed in 1916. They are operated from 16 cells of caustic soda battery, and are controlled in line relays. Track circuits are direct current and are operated from 3 cells of caustic soda battery.

Turnout and crossover switches are equipped with switch boxes. Signals governing facing movements over switches have their control wires broken through the switch boxes. Where switches are located within one rail length of a battery or relay location, the switch box is wired to open the battery or relay lead, and shunt the track. When not near such locations, the switch box is wired to shunt the main track, through two No. 9 flexible insulated wires connected to each rail.

All passing track and siding switches are equipped with pipe connected derails, having lighted markers.

Fouling protection at all switches consists of two No. 6 bare copper wires, run in trunking, and bonded directly into the main track rail and outside lead rail midway between the insulated joints in the outside lead rail.

At Woodbine, Ky., the south end passing track switch is operated by a low-voltage switch machine, which together with signals governing over the switch is controlled by a table interlocker, located at Woodbine station. Approach and detector locking are also provided for this layout.

A mechanical interlocker at Willoughby, Tenn., protects the crossing with the Southern Railway. The high signals on the Louisville & Nashville Railroad are electrically operated and have pipe connected calling-on arms. Derails are provided on both roads. Approach and detector locking are also provided on the L. & N. The signals on the Southern are mechanically operated and no approach or detector locking is provided.

At Englewood, Tenn., the main line of the L. & N. is crossed by the Athens and Jellico Branch of the same company. The crossing is protected by wooden crossing gates, which are normally set against the branch line trains, and which are equipped with circuit controllers and markers. The circuit controllers are so arranged that when the gates are unlocked, the main-line signal controls are opened, causing the northward and southward signals to assume Stop position.

Power for the train control system is furnished from substations at Corbin, Lot, LaFollette, Coal Creek, West Knoxville, Madisonville, and Etowah, [power is supplied by various companies.] Emergency power is provided for at West Knoxville and Etowah. The substations are automatic in action and power for the train control is transmitted at 550 volts, single phase, 60 cycle, between Corbin and Madisonville and at 440 volts, single phase, 60 cycle between Madisonville and Etowah.

At signal locations and cut-sections, a 5 V. A. line transformer is mounted on the pole line cross-arm and furnishes energy at 110 volts to the primary of the track transformers. Choke coils, lightning arresters, grounds and fused cut-outs are provided at these transformer locations.

The track element of the train-control system is an alternating current carried through the combination of a track transformer secondary, a reactor or resistor, the track leads, the track rails, and the front wheels and axles of the locomotive.

The point in the rear of a signal to which the signal and track relays control the alternating current is termed the breaking or "B" point. The 110 volt energy from the secondary of the line transformer is carried into the signal case where it is fused and selected through contacts of the signal and track relays and is then impressed on the primary of 1.8 V. A., 110-3.87 to .58 volt track transformer. One tap on the secondary of this track transformer is connected to one track lead of the track circuit in the rear of the signal. Another tap on this secondary is connected through an 8-ohm resistance unit to the other track lead of the track circuit just in the rear of the signal. At the other end of this track circuit the secondary of a track transformer whose primary may be controlled as noted above, or through the advance track relays, is connected to one of the track circuit leads. Another tap on this secondary is connected through a 2-ohm reactor, the track battery and the track battery resistance unit to the other track lead. The taps on the track transformer secondary are so selected that an alternating current of a proper value flows in the track rails when the rails are shunted by the train.

High-speed cut-out loops are provided at Woodbine, Savoy, Saxton, Lot, Holton, Trevilion, Mentor, and Jena. A high-speed cut-out track circuit is provided for southbound trains in the main track at Etowah.

Cut-in loops are provided at Corbin, Woodbine, Savoy, Saxton, Lot, Holton, Trevilion, West Knoxville, Mentor, Jena, and Etowah. Cut-in track circuits are provided at Corbin and West Knoxville.

Then follows a description of the apparatus and its operation after which the report continues:

As a result of this inspection and test, it was found that the installation meets the requirements of our specifications and order except as noted below, and it, therefore, is approved, except as hereinafter indicated:

1. Locomotives used in pusher service should be equipped for backward running under train control, or so arranged that the low-speed limit will be imposed when running backward.

2. Trains of the Southern Railway are operated between Holton and Lot. It is understood that the locomotives hauling these trains will be promptly equipped for train control.

3. The cut-in loops should be carefully checked and in all cases made sufficiently long to insure that the train control relay will be energized for a sufficient period of time to open the stick contact of the cut-out relay and thus make sure of the necessary automatic cut-in of the train-control device.

The Louisville & Nashville is expected to comply with the following requirements as to maintenance, tests, and inspection:

1. Such pneumatic portions of this device as contain functional parts essential to brake application, located outside of the cab, must be protected adequately against freezing since if these valves should be sealed closed in normal position the result might be serious.

2. In this installation, train control protection between a stop signal and an open switch depends upon the proper operation of the switch box to shunt the train control current. Should the switch box become disconnected or out of adjustment, or should the contact springs become loose, broken or fail to make contact, or should one or both of the shunt wires leading from the track rails to the switch box become loose or broken, the train-control track current might not in some cases, and in other cases would not be effectively shunted, so that the train could approach the open switch without receiving an automatic brake application or cab signal warning. A condition of this kind was found during the final inspection and test, the switch box at the north end of the north crossover at LaFollette failing to shunt the train-control track current, due to the shunt wires being loose on the binding posts. After these connections were tightened the switch-box shunt imposed a red indication on the locomotive until it was within 180 feet of the reversed switch. Another failure to shunt the train-control track current occurred during the inspection at the switch just south of the Tennessee River bridge at Knoxville. The distance between stop signals and facing point switches in this installation ranges from a few feet to a maximum of 4200 feet.

Further tests developed the fact that when the locomotive occupied the main track with no other train in advance in the block, a switch opened resulted in the display of a red cab signal until the locomotive was within a distance of from 300 feet to 4 feet from the open switch, at which time the cab indication changed to green, this green indication being held until the receiver had passed the first lead joint, after which it changed to red. This condition was due to the relative capacities of the shunt imposed by the locomotive wheels and axles and that of the switch-box shunt. These cases indicate that since switch boxes and their connections to the track rails constitute a shunt circuit which if open or varied in value may effect the operation of the train-control system under the circumstances described, they must, if depended upon, be so constructed, installed, inspected and maintained as to afford safeguards in accordance with the best engineering practice, to the end that the possibilities of a false clear failure may be reduced to a minimum. In other words, the installation must be such at all times that an open switch will initiate an automatic brake application, or impose low speed restrictions at such distance from the switch as to insure protection, maintaining this low speed restriction to a point which will prevent the speed of the train from being so increased as to introduce an element of danger. Should this arrangement be found unsatisfactory or impracticable to maintain, other means of protection must be applied.

3. Instructions, reports, and records in effect at the time of inspection relative to tests of locomotives and roadside apparatus should be consistently observed and continued; all reports to be made on forms provided for that purpose and regularly forwarded by the inspectors to a designated officer.

4. It is suggested that numbered seals, properly recorded, be used instead of the ordinary wire pressed seals in use at the time of inspection.

The attention of the Louisville & Nashville is directed to the following items with respect to signals and related matters:

1. There is no detector circuit on the Southern Railway track at Willoughby interlocker, to prevent a towerman from displaying a clear signal for a Louisville & Nashville train with a crossing train occupying the track between the home signals at this crossing.

2. The protection afforded against branch line trains at Englewood crossing consists of wooden gates. It is suggested that consideration be given to this situation with a view to possibly providing increased protection.

3. When the train control feed valve was adjusted for maximum pressure in order to test the effectiveness of the safety valve, pipe 4 pressure increased from 68 pounds to 102 pounds, with the result that blow-down time increased from 35 seconds (normal) to 79 seconds. The safety valve operated, but did not relieve the excess pressure. The choke in the safety valve was then removed with the feed valve still adjusted for maximum pressure. The safety valve again operated but without relieving the excess pressure, pipe 4 pressure increasing from 68 pounds to 85 pounds, the blow-down time increasing from 35 seconds (normal) to 60 seconds.

Since the tests to determine the efficiency of the safety valve in preventing accumulation of excess pressure in the control system demonstrated that it could not, under all conditions, prevent an appreciable increase in this pressure, and since an increase in control-system pressure causes an increase in the delay time of automatic applications, this should be fully considered in connection with the factor of safety used in the establishment of braking distances.

4. While established braking distances appear to be adequate for trains running at authorized speeds, these braking distances should be given careful consideration wherever there is chance of such authorized speeds being exceeded. This suggestion is made as a result of the tests in connection with signal 3102.

The Louisville & Nashville is expected to promptly and currently inform us as to the progress made in conforming to all the above.

The Railway Strike in Great Britain*

How London & North Eastern met situation created by the general strike

By Sir Ralph L. Wedgwood

Chief General Manager, London & North Eastern Railway

THE British public know what a national railway strike means. There was one in August, 1911, because the railway companies, with the exception of the North Eastern, would not recognize trade unions and the men were dissatisfied with the conciliation boards which had been set up four years earlier. A second took place in 1919 about the fixing of wages on a new basis to suit the conditions caused by the war.

For the first time last month the people felt the effect of a simultaneous stoppage of the railways, the docks, the underground or "tube" lines, the omnibus services, the printing trades and a number of other productive industries. The coal miners had automatically ceased work on May 1 on the breakdown of the negotiations which the government had been conducting between them and the coal owners. Thereupon, the Trades Union Congress declared a "general strike" to take effect at midnight on Monday, May 3. The orders of the Congress were faithfully obeyed by the unions concerned, and nearly 3,500,000 stopped work.

The country was undismayed. It managed to transact much of its ordinary business in spite of the strike. The government organization for meeting the emergency worked well. There was an abundance of food. The power stations were kept going. Most newspapers were issued in an abbreviated form. In a few days it was evident that the services of the strikers were not indispensable and many of them began to return to their posts. Soon after mid-day on May 12 the Trades Union Congress informed the government that it had decided to terminate the general strike unconditionally. The railwaymen were left to make terms for their reinstatement with the companies as best they could, and a settlement was reached on Friday, May 14. Thus ended the most formidable strike which has ever taken place in Great Britain, and it is thought that some account of the experience of one of the main railways during this exciting fortnight will be of interest to American readers.

The Strike on the North Eastern

The London & North Eastern is the largest carrier of mineral traffic in Great Britain. It has a monopoly in the coalfields of Northumberland, Durham, the Lothians and Fife. It has also huge interests in the coalfields of Nottinghamshire and Yorkshire as well as a share in the traffic from the pits in Lanarkshire, Lancashire and North Wales. In 1925 the company carried 87,000,000 tons of coal and coke. Twenty-five million five hundred thousand tons of that quantity were shipped at docks and staiths owned by the railway. The effect of a coal stoppage alone on the company's prosperity is bound to be serious. The wider cessation of work hit the company very hard. Owing to the location of many of its lines in industrial areas, the great majority of the staff are staunch trade unionists, and only 12 per cent of the personnel stuck to their posts when the strike was called. Seventy-six en-

gine drivers out of 11,500 remained at work. Eighteen firemen were all that could be mustered out of a similar number. One hundred and forty-three guards were available, representing 2 per cent of the full strength. Signalmen were more loyal: 503 of that grade "stayed in," or 5½ per cent of the number in the grade. On the other hand only 57 shunters out of 5,300 reported for duty, so that the company was desperately short of the men whose services are essential for the movement of traffic.

It should be remembered that the 167,000 men who went on strike had no quarrel with the company. They had high wages in comparison with many trades, an eight hour day, a guaranteed week, conciliation machinery for remedying grievances and the protection of the Railways Act of 1921.

When the National Union of Railwaymen notified its intention to call a strike the London & North Eastern replied pointing out the liability for damages incurred by the men in breaking their contracts of service and reminding them that if lives were endangered by their action, they would render themselves liable to criminal prosecution.

A warning notice was also posted in the following terms over the signature of the chief general manager:

"The Company have received an intimation that a number of their staff have been instructed by their Trade Union to cease work today, Monday, 3rd May.

"The Company desires to impress upon the staff that if they leave work in the manner indicated they will be breaking their contract of service.

"The Staff are reminded that they cannot legally terminate such contract except by giving proper notice in accordance with the terms of their engagement."

At the same time the company issued a warning to the public in these terms:

"The public are informed that the company have received an intimation that a number of their servants will leave their employment without proper notice on Monday, May 3rd. The Company, therefore, intimate that they cannot at present undertake responsibility for the carriage of passenger and merchandise traffic, and will not be liable for any loss which may arise."

The object of these notices was to let both the men and the public know at the earliest possible moment exactly how they stood and, throughout, the company consistently held to this policy of taking everyone into its confidence.

Special Organization Formed

At 3 p.m. on Monday, May 3, the company brought into force a special organization which it had prepared for dealing with emergencies. The ordinary departmental arrangements were suspended for the time being and the strike business was conducted through three controls reporting to the chief general manager at King's Cross. One control at Liverpool Street, London, administered the affairs of the southern area of the system. The second at York looked after the north eastern area and the third at Edinburgh took charge of Scotland. Each control was supervised by the divisional general manager for the particular area and consisted of such of his departmental officers as he assigned for the purpose. The area control worked through district controls at the principal centers. The southern area, for example, had district controls at King's Cross, Stratford, Marylebone (all in London),

* Sir Ralph Wedgwood, the author of this article, was Chairman of the Controlling Committee of the Railway Information Bureau during the British General Strike.

Cambridge, Norwich, Nottingham, Doncaster, Leeds, Manchester and Grimsby.

This special organization had the advantage of pooling the resources of all departments. It provided machinery for collecting and transmitting information to headquarters. Conversely, orders were speedily distributed through the controls to all points on the line. The best use was made of telephone and telegraph—a matter of importance, as many of the operators had left duty. Finally the controls dealt promptly with emergency problems as they arose by direct conference of the officers concerned. The arrangements worked well and relieved the chief general manager of executive worries so that he could give all his time to questions of policy.

The strike began at midnight on May 3. At first the unions offered to allow men to work certain traffics, but the L. N. E. R. Company declined to admit the right of the men to select their work. All men who declined to perform any part of their normal duty were dealt with as on strike. On May 5 the National Union of Railwaymen simplified matters by instructing its members "to handle no traffic of any kind—foodstuffs or otherwise."

Progress of the Strike

The first day of the strike, Tuesday, May 4, was difficult, and only 84 trains could be run. At the request of the government priority was given to milk trains bringing supplies to London and the larger provincial towns. The bulk of the engine power available was then concentrated on passenger rather than on goods train services and preference was also given to suburban over main line services. The steady growth of the services is shown by the following table:

	Number of Trains run—	
	Passenger	Goods
May 4th.....	84	6
" 5th.....	281	11
" 6th.....	559	20
" 7th.....	682	23
" 8th.....	757	4
" 9th.....	No Sunday services	73
" 10th.....	945	105
" 11th.....	1049	171
" 12th.....	1105	174
" 13th.....	1161	218
" 14th.....	1191	237
" 15th.....	1403	

The work of the first two days was satisfactory in the face of the difficulties to be surmounted, and the chief general manager issued a message of encouragement to the loyal staff, which is reproduced below.

"I should like all the staff to know how well things are going, and how much the government and other authorities are impressed with the great effort which the railway companies are making.

"Yesterday we ran 148 trains; today we have passed the 200 mark. There is every prospect of a steady and rapid increase in the train services from day to day. London railway recruiting offices are overflowing with volunteers, many of whom are of the best kind for our purposes. From all we can learn the experience at other centers is the same.

"Fifteen milk trains ran this morning, and special attention is being given now to fish and other perishables. A dining car will be run on the York train tomorrow. These things are small in themselves, but every improvement in our services that can be effected shows that we know how to keep the flag flying, and wins us further support from the public.

"I take this opportunity to thank all the staff who have remained loyal to their service for the magnificent work which they are doing. I know that many of them are working under conditions of great difficulty, often involving long and irregular hours of duty. If we carry on as we have begun, we may look for a speedy end to the present situation."

The passenger trains on May 6 included the "Flying Scotsman" from London crowded with passengers, and on this day the L. N. E. R. ran the first restaurant car during the strike by the 9.00 a.m. from London to York. The passenger receipts at King's Cross (London) on May 8, were only 40 per cent below receipts for the corresponding day in 1925. On the same day the boat train service from London to Harwich was resumed and the two boats for the Hook of Holland and Esbjerg got away promptly. So well were things going that on Sunday, May 9, the Chief General Manager indited another message to the staff which is again quoted in full.

"After five days of strike we can now take stock of the situation.

"On Saturday we ran 757 passenger trains, equal to 12 per cent of our

full normal service. There has been a steady improvement day by day, and we can confidently anticipate a further advance. The Flying Scotsman is again running and has been crowded. The continental boat train for the Hook of Holland also started again on Saturday night, and sailings from Parkstone Quay are resumed.

"The freight service has made a good beginning; fish, butter, meat, vegetables, petrol and live stock are now being moved.

"The position is far better than could have been anticipated, and is the result of the united and untiring efforts of the staff, who have remained loyal to their service.

"Our air must now be to develop still further the services already in existence, and particularly the freight service carrying essential commodities.

"Volunteers of an excellent type are being trained in large numbers, as drivers, firemen, signalmen and guards.

"The Company wish it to be known that the staff who remain loyal to them may look in the future to receive the fullest support and protection which the Company can afford to them.

"Staff now on strike who return to duty in the immediate future will be welcomed and will receive the same measure of protection, provided they are willing to join with us wholeheartedly in any suitable capacity and help to get the wheels turning."

Throughout the strike sailings of the company's steamers from Hull and Grimsby to the continent were continued in spite of the embargo placed on bunkering in this country, and on May 10 the steamer services run by the company on the river Clyde were resumed. On May 14, the day of the strike settlement, the passenger train mileage was over 27,000 miles, or 15½ per cent of the normal figure. The goods train mileage was 8,017, representing 5½ per cent of normal. The effort to close the railway had failed conspicuously.

How the Strike Collapsed

The collapse of the strike was hastened by the return to duty of some of the strikers. By the end of the first week over 700 men had come back. This number was doubled on May 10. Two days later the chief general manager published a grave warning to the strikers in these terms:

"The London & North Eastern Railway Company wish to notify their staff now on strike that at the conclusion of the strike the number of staff whom the company can employ will be materially reduced.

"The effect of the strike upon the trade of the country must be to diminish substantially the tonnage of traffic to be handled, and it will necessarily take a considerable time for trade to recover.

"The company wish it to be understood that at the conclusion of the strike they will give preference for employment to those of their staff who have remained at work or who offer themselves for re-employment without delay."

This notice had an immediate effect. On May 13 the number of strikers back at work jumped to 5,570 and a further lot of 770 came in on the next day. Each of these men was handed a notice saying:

"You are hereby re-engaged, but your engagement is on the understanding that the company reserve any rights they may possess in consequence of your having broken your contract of service."

Many of the men were very suspicious about this notice and believed that it foreshadowed a reduction in wages. This led the company to issue the following announcement to their men on May 13.

"Rumors have been circulated to the effect that the Railway Company propose to take this opportunity of reducing the wages of their drivers, firemen or other grades; also that the Railway Company propose, in taking men back into the service, to take them on as new entrants, as a result of which the men would receive lower rates of pay as well as losing the benefits of their seniority.

"Both these rumors are entirely without foundation. Men accepted for re-employment will come back at the rates of pay which they were receiving before the strike, and without loss of service."

Many Volunteers Employed

A second great factor in breaking down the strike was the employment of volunteers in place of the regular railwaymen. The managing and clerical staff of the company came to its help in a way which was beyond all praise. Outside assistance was also enlisted freely. On May 4, the company advertised that engine drivers, firemen, cleaners, motormen, guards, signalmen, shunters, carters, vanmen, stablemen, porters, general laborers and despatch riders were needed for urgent and essential services in connection with the working of trains. The posters were followed up by an appeal broadcast by wireless. Before the strike came to an end tens of thousands of volunteers were enrolled and over 10,500 were employed. No

skilled men were turned away. At King's Cross (London) Station alone, nearly 7,000 volunteers were enrolled and of this number 1,688 were posted to the grades which are most intimately connected with the handling of traffic.

These volunteers were from many sources. Men were released from the Royal Air Force and others came from universities, medical schools, banks and offices. The country's unemployed hastened to seize an unprecedented opportunity of temporary employment. Women came forward in large numbers and many served in the canteens. The whole of the Pullman Car Company's staff on the L. N. E. R. volunteered for service in a body and were usefully employed in catering for loyal employees and volunteers. Naval ratings kept the company's electric power stations going. A few volunteers were employed at once as drivers, firemen, guards and signalmen. Others had to be trained and were passed through schools for footplatemen, guards and signalmen, which were established under the direction of qualified instructors at various centers. Men from these schools were sent to work with regular hands or experienced volunteers before taking charge of work on their own responsibility.

The volunteer offices were in constant touch with the controls and sent out batches of men as required. Seventy-five stablemen and provendermen, for example, were asked for at 6.00 p.m. one night: the men were provided and on duty at 6.00 a.m. the following morning. The locomotive and traffic departments had the first call upon volunteers, but men were also taken in the engineering, telegraph, hotels and other departments.

All volunteers willing to accept remuneration for their services were paid the current rate of the grade in which they were employed, and overtime, night duty and Sunday duty was paid for at the standard rates.

It was realized that careful rostering, feeding and resting arrangements were essential if the staff were to carry through to the end successfully. Hours, inevitably, were long, but as far as possible staff were put on regular shifts of 8 to 12 hours and every effort was made to provide comfortable sleeping accommodation.

A thoroughgoing distribution of food was rapidly organized in which hotels, dining cars, and canteens played a most valuable part. Entertainments were arranged at various centers for the benefit of loyal workers and volunteers. Apart from those members of the staff who were required to be available at all times, employees were encouraged to travel daily to and from their homes. Motor cars were available for those who could not make their own transport arrangements.

Publicity an Important Factor

A third reason for the success of the company has been hinted at already. This was the care given to publicity. In no previous strike in Great Britain has the Company's case been put so fully and promptly before the country. As a result public opinion was unreservedly with the railway throughout the struggle. Much credit for this is due to the company's advertising manager, who organized the issue and distribution of all public announcements and "time sheets." These were posted with the utmost dispatch. The time sheets kept pace very well with the developing services. Some difficulty was experienced at first in getting material printed, but until the printers resumed some of the company's own staff turned themselves into compositors and produced excellent work. The advertising manager also arranged with the British Broadcasting Company for the broadcasting of wireless messages about train services and the general railway position. Another effort of his was the publication of the "L. N. E. R. NEWS." The first number appeared on May 8, and six were issued in all. In the absence of daily

newspapers the "L. N. E. R. NEWS" kept the staff informed of the progress of affairs besides acting as a useful medium for outside publicity.

The touch maintained with the public was particularly valuable when the general strike ended. There was a measure of disappointment that the railway stoppage did not end at the same time. On May 13, while notifying the public that the regular service of trains would be resumed as quickly as practicable and that the emergency services would be amended and increased, the company announced that it had been unable to arrange with large numbers of its staff to resume duty immediately. The staff still on strike were informed that they would be re-engaged as and when work was available for them subject to two conditions:

1. Every railwayman who left his work without proper notice has committed a breach of contract and has thereby involved the railway company in heavy losses. The railway company are notifying all the men who offer themselves for re-employment that the company reserve any rights they possess to damages for breach of contract.
2. A number of the company's staff occupying positions of responsibility in which they were entrusted with the supervision of other members of the staff have gone on strike. The company propose to examine these cases individually and to decide in each case whether they can re-employ the man concerned in the position which he occupied before the strike. Pending this consideration they are not prepared to re-employ the men concerned who in addition to their breach of contract have been guilty of a breach of trust towards the railway company.

The company expressed the opinion that its action on these two points was essential if the future was to be free from the unwarranted disturbances which had too often occurred in the past and asked for public support in insisting upon these safeguards for future peace and discipline. These announcements were repeated in circular form to the volunteers with an urgent request that all volunteers should continue to place their services at the disposal of the company until the matter had been brought to a satisfactory conclusion. The volunteers, almost to a man, honored this request.

Terms of Settlement

When it was found that the railways were not prepared to take back all their men immediately and unconditionally, the unions called upon their members to continue the strike. There was little heart left in the fight and after several meetings between the unions and the railway managers a settlement was reached on Friday, May 14.

The terms of the settlement were these:

1. Those employees of the Railway Companies who have gone out on strike to be taken back to work as soon as traffic offers and work can be found for them. The principle to be followed in reinstating to be seniority in each grade at each station, depot or office.
2. The Trade Unions admit that in calling a strike they committed a wrongful act against the companies, and agree that the companies do not by reinstatement, surrender their legal rights to claim damages arising out of the strike from strikers and others responsible.
3. The Unions undertake:
 - (a) Not again to instruct their members to strike without previous negotiations with the companies.
 - (b) To give no support of any kind to their members who take any unauthorized action.
 - (c) Not to encourage supervisory employees in the Special Class to take part in any strike.
4. The companies intimated that arising out of the strike it may be necessary to remove certain persons to other positions, but no such person's salary or wages will be reduced. Each company will notify the Unions within one week the names of men whom they propose to transfer, and will afford each man an opportunity of having an advocate to present his case to the general manager.
5. The settlement shall not extend to persons who have been guilty of violence or intimidation.

The unions instructed their members that there must be no intimidation or interference with loyal staff. The company responded by asking that nothing should be done on their side to cause ill-feeling and by applying the settlement in a generous spirit. The situation called for good will on both sides. General trade was in a bad state. The coal strike was clearly going to drag on. In order to save fuel the passenger service had to be cut down to 50 per cent of normal. It looked as though 25 per cent of the strikers could not hope for re-employment. The unions appealed to the companies to help them through the difficult period which lay ahead, and on May 21 an agree-

ment was signed for the temporary suspension of the guaranteed week. This arrangement does not apply to men who remained loyal. Employment will be found for as many of the strikers as possible by distributing work on a basis which will give three days' ordinary pay to each man re-engaged. In other respects the existing national agreements remain in force. Truly a sorry ending to the great adventure from the point of view of the railwaymen!

The cost of the strike to the London & North Eastern may be put at the round figure of £1,000,000. This estimate allows for the loss in gross receipts and for the saving in wages which were not paid to the strikers. It also takes into account expenditure on volunteers and on a handsome bonus which is being given to loyal staff. It does not include anything for consequential losses which may arise from the fresh impetus given by the strike to motor competition.

Heavy as the loss to the company and its employees has been, there are compensating gains. The trades unions have given up all faith in the policy of a general strike. Their defeat has been a triumph for constitutional procedure as a means of settling industrial disputes. Since 1911 the country has been unsettled by a series of strikes. Nearly every trade has been involved at one time or another. Owing to economic conditions most of the strikes ended in concessions to the workmen. Now the greatest strike of all has emptied the coffers of the unions and must have shown their members that they have to face a new set of circumstances. Much hard work will be needed to make good the ground lost by the stoppage, but encouraging reports have come to hand which prove that the railwaymen are putting their best foot foremost. Their leaders have urged them to give to the company of their best and to observe the letter and spirit of the agreements into which they have entered.

Argument on Santa Fe Valuation

WASHINGTON, D. C.

ORAL arguments were heard by the Interstate Commerce Commission on June 17, 18 and 19 on the tentative valuation report on the properties of the Atchison, Topeka & Santa Fe, which stated a final value for rate-making purposes of \$571,000,000, whereas the company claims a value of at least \$750,000,000.

S. T. Bledsoe, general counsel of the Santa Fe, said its main contention was for the restoration of some

\$40,000,000 written out of the engineering reports of the district engineers who had charge of the inventorying of the property, after the engineering offices were consolidated at Washington. He also criticised the deduction by the Bureau of Valuation of \$108,000,000 for depreciation, saying that the cost of producing the property in the condition it was in on valuation date was greater than its original cost or than the cost of reproduction new as reported by the Bureau. The latter figure, including land and materials and supplies on hand, was \$656,000,000 and the cost of reproduction, less depreciation, was reported as \$548,000,000. To this, he said, the commission had added only \$22,000,000 to produce a final value for rate-making purposes, although it had said that it had "taken into consideration" many items, including going concern value. W. B. Storey, president of the company, had testified that the cost of developing the business of the Santa Fe to valuation date, 1916, was \$82,000,000, and the company had claimed \$68,000,000 for going value. Charles Woods, general attorney of the Santa Fe, discussed many items which he said had been erroneously omitted from the cost of reproduction, and R. J. Lehman, attorney for the Bureau of Valuation, defended the tentative report.

Much of the argument was devoted to the classification of the Santa Fe's system of eating-houses and hotels as non-carrier property. Mr. Lehman said that property had been so classified when a substantial part of the use was to serve other than passengers but Mr. Bledsoe contended that the facilities were provided solely for the purpose of serving passengers and to some extent employees and that any other use was purely incidental. There was also much discussion of the fact that only \$180,000 had been allowed for cash working capital because, Mr. Lehman said, whereas Mr. Storey had testified that \$7,500,000 is necessary for this purpose, the Santa Fe's revenues so exceeded its current expenses that only a small additional amount was allowed as a "margin of safety." He said that amounts held in reserve to maintain the company's credit were not a proper charge against the rate-payers. Mr. Bledsoe read a Supreme Court decision holding that revenues, and not merely net revenues, are the property of the company.

Other subjects considered were the allowance for materials and supplies, interest during construction, freight charges on construction materials, the value of bridges built by the Chicago Sanitary District where the drainage canal was cut through the railroad right of way.



Erie Train No. 3 Near Paterson, N. J.

Legal Aspects of Consolidation*

Authority of Congress to confer power to consolidate upon state corporations engaged in interstate commerce

By Alfred P. Thom

Vice-chairman and General Counsel, Association of Railway Executives

THE question now arises whether Congress can, under the Constitution, confer upon railroad corporations, chartered by a state and authorized by the State to engage in, and actually engaged in, interstate commerce, power to consolidate or merge with one another, when the state charter confers no such power, or when such consolidation or merger is contrary to the policy of the state, in respect to parallel or competing lines or otherwise, as reflected in the statutes or constitution of the state.

Those who deny this power to Congress rely on expressions found in the cases, such as the following:

"In the division of authority with respect to interstate railways Congress reserves to itself the superior right to control their commerce and forbid interference therewith; while to the states remains the power to create and to regulate the instruments of such commerce, so far as necessary to the conservation of the public interests.

"If it be assumed that the states have no right to forbid the consolidation of competing lines, because the whole subject is within the control of Congress, it would necessarily follow that Congress would have the power to authorize such consolidation in defiance of state legislation—a proposition which only needs to be stated to demonstrate its unsoundness."

L. & N. Railroad v. Kentucky, 161 U. S. 702.

or

"It does not call for argument that railroad companies are incorporated to perform a public service, and that it is for the state to define their powers and to control their exercise of such powers."

L. & N. Railroad v. Kentucky, 161 U. S. 512.

Before proceeding to discuss affirmatively the main question above stated, brief comment should be made on these cases.

The first of them (namely, that in 161 U. S.) was a case in which the Louisville & Nashville undertook to acquire the control of and to operate certain other lines of railroad, alleged to be parallel and competing with its own lines, contrary to the constitution and laws of Kentucky which forbade the consolidation or acquisition of parallel or competing lines.

Congress had not acted on the subject, and the validity of such action by Congress was not, and could not be, involved in the case. What the Supreme Court said, as set forth in the above quotations, was said merely by way of argument and was clearly obiter dictum, which, by universal concession, does not amount to judicial authority.

Indeed, part of what is there said by the court by way of argument, namely, that "the power to create and regulate the instruments of interstate commerce, so far as necessary to the conservation of the public interests, remains with the states," is directly contrary to the repeated decisions of the Supreme Court itself, upholding the power of Congress to create and regulate such instrumentalities.

McCulloch v. Maryland, 4 Wheat. 316, 411, 422.

Osborne v. Bank of U. S., 9 Wheat. 738, 861, 873.

Pacific Railroad Removal Cases, 115 U. S. 1, 18.

California v. Pacific Railroad, 127 U. S. 1, 39.

Luxton v. North River Bridge Co., 153 U. S. 529.

Wilson v. Shaw, 204 U. S. 34.

Wisconsin R. R. Comm. v. C. B. & Q. R. R. Co., 257 U. S. 590.

And the remainder of what is there said by the court by way of argument, namely, that it would follow from

*Argument before House Committee on Interstate and Foreign Commerce on June 16, 1926.

the assumption mentioned "that Congress would have the power to authorize such consolidation in defiance of state legislation—a proposition which only needs to be stated to demonstrate its unsoundness," is said by the court in apparent forgetfulness that one of the important railroads of the country, the Union Pacific, is the product of legislation by Congress bestowing upon a state corporation the power to consolidate, and that consolidation was challenged by the state of Kansas, the state afterwards abandoning its contention, as is hereinafter more fully shown.

The second of the cases from which quotation has been made supra (namely, that in 183 U. S.) involved the question of the validity of the statute and constitution of Kentucky in their relation to intrastate traffic, forbidding a charge, or the receipt of greater compensation for the shorter than for the longer haul under certain conditions. No statute of Congress was involved nor any attempted exercise by Congress of a power to define the powers, or to control their exercise, of a railroad company incorporated by a state. Here, as in the case in 161 U. S., what was said by the Supreme Court was merely a loose expression, used arguendo, and was clearly obiter dictum only. It furnished no authority whatever. Indeed, the supreme authority of Congress over railroad corporations chartered by the state, in respect to their relative charges for the long and for the short haul in interstate commerce, has been so repeatedly exercised and so universally upheld by the Supreme Court that no citation of authority is necessary to sustain the legal proposition.

These cases forcibly illustrate the danger of relying on loose expressions of a court, used in argument, and on points not involved in the case.

Reverting now to the main question: So far as my examination of the authorities extends and so far as I am aware, no case can be found in the Supreme Court which, in the decision of the points involved, is adverse to the contention that it is within the constitutional authority of Congress to confer upon railroad corporations, chartered by a state and authorized by the state to engage in, and actually engaged in, interstate commerce, power to consolidate or merge with one another, when the state charter confers no such power and even where such consolidation or merger is contrary to the policy of the state as expressed in its statutes or constitution.

The constitutional power of Congress to enact such legislation may be sustained under several separate clauses of the Constitution, but, as its power under the commerce clause is ample, the discussion here will be confined to its power to regulate interstate and foreign commerce.

The Commerce Power

The Commerce Power, standing alone, is adequate to support such legislation by Congress.

The power of Congress to regulate interstate and foreign commerce is without limit, except the limit imposed by the fifth amendment to the federal Constitution, which requires due process of law and forbids the taking

of private property for public use without just compensation.

While this proposition of law is so well recognized as to require no citation of authority to establish it, for convenience the following cases may be cited.

Gibbons v. Ogden, 9 Wheat. 1, 196, 197.
Northern Securities Co. v. U. S., 193 U. S. 335-6.
Minnesota Rate Case, 230 U. S. 399, 411.
Houston & Texas Ry. Co. v. U. S., 234 U. S. 351.
American Express Co. v. Caldwell, 244 U. S. 625.
Ill. Cent. R. R. Co. v. Pub. Utilities Comm., 245 U. S. 506.
Hammer v. Dagenhart, 247 U. S. 269.
Wisconsin Rate Case, 257 U. S. 590.

In *Gibbons v. Ogden*, Chief Justice Marshall uses this language, which has never been departed from or questioned:

"The sovereignty of Congress, though limited to specific objects, is plenary as to those objects." "The power over commerce with foreign nations and among the several states, is vested in Congress as absolutely as it would be in a single government having in its constitution the same restrictions on the exercise of the power as are found in the Constitution of the United States."

See also

Lottery Case, 188 U. S. 353.

In view of the extent and dominant character of the commerce power, and if provision for consolidation of carriers engaged in interstate commerce is a legitimate exercise of the power of regulation, the question would appear not to admit of further debate. Under such circumstances, the conclusion would be inevitable that Congress has the power to confer upon the instrumentalities of interstate commerce authority to conform to its requirements as to the regulations it lawfully prescribes.

A Legitimate Exercise of the Power of Regulation

1. Let us, therefore, first consider whether provision for consolidation of carriers engaged in interstate commerce is a legitimate exercise of the power of regulation.

This does not seem to be doubtful.

It is, I believe, universally admitted that government ownership of such carriers may be acquired and government operation may be conducted under the commerce clause of the Constitution. This is an extreme form of consolidation, and, if this could be done under the commerce clause as a legitimate exercise of the power of regulation, anything less than this extreme would seem also to be a legitimate exercise of the power of regulation.

In view of the unifying commercial forces, affecting transportation, brought into play by steam, by gasoline, and by electricity (including telegraph, telephone, and radio), Congress may conclude that the public can no longer be adequately served by a very large number of disjointed railroads, differently and independently managed and operated, difficult to co-ordinate to the extent that the movement of commercial traffic may require; that systematic, instead of haphazard and uncertain, co-ordination is necessary; that a system of better, more dependable, and more harmonious co-operation in the operation of the instrumentalities of commerce is needed in the public interest; that this important object will be promoted by fewer systems of roads; and that the best means of accomplishing this is through consolidation. Congress may likewise conclude that the problem of preserving weak roads, rendering an important service to the public, is a problem of national significance and can be dealt with and at least favorably and substantially influenced, and perhaps solved, by consolidation.

Again, as related to the "weak road problem," there are two schools of thought in respect to prescribing divisions of joint rates with reference to the financial needs, instead of the relative service, of the participating carriers, and in respect to the present system of rate making, whereby certain shippers, not served by a weak line, are charged more than they should be, if the direct service they enjoy

is alone considered, in order to support weak lines on which they are not directly dependent for service, and whereby the excess thus paid does not go back to the shippers that have overpaid, but to the government. One of these schools of thought endorses the view that the division of rate should be made with reference to the financial needs of, and in order to support, the weak lines, while the other rejects this view and contends that the result is to take from a carrier that which it earns for a service which it performs and to give it to another which has not performed the service, simply because it needs it. One of these schools of thought endorses the present system of rate-making, while the other believes that a method should be devised whereby no shipper should be charged more than is proper for the service which he directly receives and no carrier should be deprived of any part of the revenue which it earns from reasonable rates.

Congress may, under the decisions of the Supreme Court, adopt either of these views. If it adopts the latter view, it may reasonably conclude that the difficulty may be solved or that the proper remedy will be at least promoted by a policy of consolidation.

It cannot be denied that to reach a conclusion by Congress on any one or all of the four aspects of interstate transportation above suggested is within the constitutional power of Congress, and its conclusions, when reached, cannot be considered as arbitrary and are beyond challenge in the courts or elsewhere.

The Selection of Means

2. The discretion of Congress as to the selection of means to carry out its constitutional powers.

It has been firmly established, ever since Chief Justice Marshall's time, that a sound construction of the Constitution allows to Congress a large discretion with respect to the means by which the powers it confers are to be carried into execution, which enable that body to perform the high duties assigned to it, in the manner most beneficial to the people, and that if the end to be accomplished is within the scope of the Constitution, "all means which are appropriate, which are plainly adapted to that end, and which are not prohibited, are constitutional."

Gibbons v. Ogden, 9 Wheat. 1, 196, 197.

Northern Securities Co. v. U. S., 193 U. S. 336, and cases there cited.

"In the great case of *McCulloch v. Maryland*, 4 Wheat. 316, 421, 423, it was said:

"The sound construction of the Constitution must allow to the national legislature that discretion, with respect to the means by which the powers it confers to be carried into execution, which will enable that body to perform the high duties assigned to it, in the manner most beneficial to the people. Let the end be legitimate, let it be within the scope of the Constitution, and all means which are appropriate, which are plainly adapted to that end, which are not prohibited, but consist with the letter and spirit of the Constitution, are constitutional."

Interstate Commerce Commission v. Brimson, 154 U. S. 472."

Ruidy v. Rossi, 248 U. S. 107.

If, as above stated, Congress concludes that the consolidation of the existing systems of railroad is a proper means of accomplishing its constitutional purposes, its conclusion cannot be successfully challenged.

3. The power of regulation extends not only to the methods by which interstate commerce is carried on, but also to the physical instrumentalities of such commerce.

"The power" (to regulate interstate and foreign commerce) "also embraces within its control all the instrumentalities by which that commerce may be carried on and the means by which it may be aided and encouraged."

Gloucester Ferry Company v. Pennsylvania, 114 U. S. 204.

"Its power extends to every instrumentality or agency by which it is carried on."

Wisconsin Rate Case, 257 U. S. 599.

Thus the entire instrumentality of interstate commerce is within the regulating power of Congress and when exercised the regulation is controlling and exclusive.

Minnesota Rate Case, 230 U. S. 411.

Houston & Texas Ry. Co. v. U. S., 234 U. S. 351.

Hammer v. Dagenhart, 247 U. S. 269.

Wisconsin Rate Case, 257 U. S. 589.

4. The power to regulate is a power to "aid and en-

courage," to "foster and protect," as well as to "control and restrain."

Gloucester Ferry Co. v. Pennsylvania, 114 U. S. 204.
Houston & Texas Ry. Co. v. U. S., 234 U. S. 351.

Congress, under its power to regulate commerce, may make the interstate commerce system, including the instrumentalities of such commerce, "adequate to the needs of the country."

Wisconsin Rate Case, 257 U. S. 589.

It would seem to be beyond question, in the exercise of the power of Congress over the instrumentalities of interstate commerce (*Wisconsin Rate Case*, 257 U. S. 589), of its broad discretion to "select the means" by which its constitutional powers may be carried out (*McCulloch v. Maryland*, 4 Wheat. 423), in the exercise of its power "to aid and encourage" (*Gloucester Ferry Co. v. Pennsylvania*, 114 U. S. 204), "to foster and protect" (*Houston & Texas Ry. Co. v. U. S.*, 234 U. S. 351), and "to make the instrumentalities of such commerce adequate to the needs of the country" (*Wisconsin Rate Case*, 257 U. S. 589), and in view of the reasonable relation, as above shown, of consolidation to the power of regulation, Congress may deal with, regulate, and confer the power of consolidation on these instrumentalities, if it may confer the power upon corporations chartered by a state.

Additional Franchises May Be Conferred Upon State Corporations by Congress

5. Inasmuch as exercise of the power involves the conferring by Congress upon state corporations of additional franchises, it is appropriate to consider whether Congress has this power. That it has, is abundantly established by repeated decisions of the Supreme Court of the United States.

California v. Pacific Ry. Co., 127 U. S. 139.
United States v. Stanford, 161 U. S. 412, 433.
Southern Pacific R. R. Co. v. U. S., 183 U. S. 519, 527.

In the case of the Southern Pacific Railroad Company v. United States, 183 U. S., page 527, it is said:

"It is well settled that Congress has power to grant to a corporation created by a State additional franchises—at least franchises of a similar nature."

That, of course, is to say, that the franchises granted to a transportation corporation must be with respect to commerce and transportation.

"Congress has frequently conferred upon railway companies, existing under territorial or state laws, additional corporate franchises, rights, and privileges, and its right to do so cannot be doubted. Thus it was held, in *California v. Pacific Railroad Company*, 127 U. S. 1, 39, that Congress possessed and validly exercised the power to create a system of railroads connecting the east with the Pacific Coast, traversing States as well as Territories, and to employ the agency of State as well as Federal corporations."

Oregon Short Line Railway v. Skottowe, 162 U. S. 494.

It has exercised the power of limiting franchises granted by a state to a transportation corporation created by it, in almost every essential particular—in the making of rates, in the character of equipment, in the character of service, in the matter of safety, in the keeping of accounts, in the division of revenues, in the limiting of revenues, and in the issuing of securities.

The Supreme Court has upheld this exercise of power wherever it has been questioned.

This authority to control the powers of a state corporation has not been exercised by Congress merely in the direction of restriction or limitation. It has been exercised to confer additional affirmative powers of the most fundamental and substantial character upon state corporations.

In *California v. Pacific Railroad Company*, 127 U. S. 1, the power was conferred upon a state corporation to extend its construction beyond the limits permitted in the state charter.

By the Act of March 3, 1865, Congress conferred upon

the Central Pacific, a state corporation, and the Western Pacific, a state corporation, in addition to their powers under their state charters, power to issue "their 6 per centum, 30-year bonds" to a very large amount in the aggregate, and also conferred upon them other franchises. This exercise of power was mentioned with evident approval and without question by the Supreme Court of the United States in the case of *United States v. Stanford*, 161 U. S. 426.

6. In fact, Congress, in order to carry out a national object, constitutionally within its power, may employ any agency it sees fit. It may employ the agency of a state corporation as well as a federal corporation.

Wilson v. Shaw, 204 U. S. 34.
Pacific Railroad Removal Cases, 115 U. S. 1, 14, 18.
California v. Pacific R. R. Co., 127 U. S. 39.
United States v. Stanford, 161 U. S. 433.

An important memorandum on the subject of the powers of Congress under the commerce clause of the Constitution was prepared in November, 1916—not long before his death—by the Honorable Richard Olney, attorney-general and secretary of state in Mr. Cleveland's cabinet. A part of it is pertinent here and is respectfully presented for consideration.

"1. For all the purposes and functions of commerce between the states of the United States, between such states and territories of the United States, and between such states and territories on the one hand and foreign nations on the other, the United States is one country, with complete and exclusive jurisdiction over the whole subject—and state lines and jurisdictions are without significance.

"2. Commerce, in the constitutional sense, covers transportations and intercourse in all forms and whether existing when the Constitution was adopted or since introduced and practiced.

"3. The national commerce power, being of such extent and exclusiveness, necessarily subjects to national regulation and control all the agencies and instrumentalities by which national commerce is carried on.

"4. It cannot be doubted that a railroad corporation created by a national charter is an apt instrument for the carrying on of national transportation and that the organization of such a corporation with all the appropriate powers and duties is a fit subject for treatment under the commerce power."

From the foregoing it will be seen, that Congress, in the exercise of its power under the commerce clause, may itself create a corporation and endow it with all necessary powers as a means of regulating commerce; that, instead of itself creating such a corporation, it may avail itself of the agency of a corporation already created by a state and endow it with the necessary powers deemed by Congress essential to the carrying on and regulation of commerce.

Beyond Power of State to Modify

7. The state itself cannot complain of this power. It chartered a corporation and authorized it to engage in interstate commerce. By this act it consented in advance to subject it to the full exercise of the powers of Congress in the regulation of commerce. One of these powers is shown by authority to be to grant to the state corporation additional franchises for the purpose of promoting the interstate commerce for which the state corporation was organized.

Inasmuch as the additional franchise is a matter of regulation of interstate commerce, this regulation stands just as any other valid regulation by Congress and is beyond the power of the state to modify, to take away, or to question. The corporation still remains a corporation of the state and subject to its power, except that it cannot affect this franchise, which, as stated, is a valid regulation by Congress of interstate commerce, and, as held in *California v. Pacific Railroad Company*, supra, "cannot be taken away nor destroyed nor abridged nor can they be crippled by onerous burdens."

The Union Pacific

8. It is interesting to note that one of the largest and most useful systems of railroad transportation on the continent—the Union Pacific—is the product of the

exercise by Congress of the authority to confer upon a state railroad corporation the corporate power to consolidate with another railroad corporation. In this case the Leavenworth, Pawnee & Western was incorporated by the legislature of the territory of Kansas in 1855. In 1861 the territory of Kansas became a state. In 1862, Congress authorized this corporation, which was then a corporation of the state of Kansas, to consolidate with the Union Pacific.

The Leavenworth, Pawnee & Western accepted the provisions of this act of Congress and was thereafter designated as the Union Pacific, Eastern Division. In 1864, Congress passed another act with reference to the route of that road and made provision likewise for the consolidation of any two or more corporations embraced in the system. In 1866, Congress passed an act authorizing the above mentioned company to make its connection with the Union Pacific at a designated point; and by another act in 1869 the company was authorized to extend its road to Denver and was given other powers. On the same day Congress passed a joint resolution authorizing this company, under the name of the Union Pacific, Eastern Division, by a resolution of its directors, to change its name to the Kansas Pacific.

The Consolidation

On the 24th of January, 1880, the Union Pacific, the Kansas Pacific, and the Denver Pacific Railway & Telegraph Company, acting under the authority of the act of Congress of 1862 and of the act of Congress of 1864, entered into an agreement for the consolidation of the three corporations into one, by the name of the Union Pacific Railway Company, and, as stated by the Supreme Court, "from that time the road of the Kansas Pacific Company, including that portion which lies in Kansas, has been operated and managed as the Kansas Division of the Union Pacific Railway Company."

At the first session of the legislature of Kansas after this consolidation was effected, a resolution was passed directing the attorney general to inquire into its validity, and subsequently at another session of the Kansas legislature, the attorney general was, by a resolution, directed to institute proper proceedings in the supreme court of that state by way of quo warranto to challenge the legality of the consolidation of this state corporation with the Union Pacific under the authority of an act of Congress.

A motion to remove to the United States court was made and was denied, and thereupon the case was taken to the Supreme Court of the United States to test the question of its removability to the federal courts. The Supreme Court decided that the case was removable because the federal question of the validity of the act of Congress authorizing the consolidation was involved, and in *Ames v. Kansas*, 111 U. S. 449, the right to remove was upheld and the case remanded to the lower federal court for further proceedings.

After the return of the case and the circuit court was directed to entertain the case as properly removed from the state court and to proceed accordingly, the state of Kansas abandoned its attack upon the validity of the consolidation.

The Union Pacific is thus today made up in part of the property of the Kansas Pacific, which it acquired under the authority of Congress authorizing the state corporation to consolidate with it.

It is submitted that the result of the foregoing discussion is to uphold the power of Congress to authorize state corporations engaged in interstate and foreign commerce to consolidate under such terms as Congress may prescribe.

Railroad Legislation Before Congress

WASHINGTON, D. C.

FURTHER opportunity for some of the railroad bills that have been passed by the Senate to be considered possibly in the House was afforded by the action of the House on June 21 in voting to refer to the ways and means committee the concurrent resolution providing for an adjournment of Congress on June 30, which had been agreed upon by the administration leaders. However, it is believed that all prospects for any major railroad legislation beyond the railway labor bill that has been passed, have now been postponed until the next session.

The House rules committee on June 21 brought in a resolution providing for the consideration in the House on June 23 of the bill H.R. 12,065, introduced by Representative Newton, which provides for several amendments to the interstate commerce act, including an increase in the period for which the Interstate Commerce Commission may suspend a new rate. This bill is a combination of several bills previously introduced by Mr. Newton, and was favorably reported, following a series of hearings, by the committee on interstate commerce.

The refusal to accept the resolution for adjournment was due to the attitude of those who are insisting that the Senate pass a farm relief bill and the rivers and harbors bill before adjournment. The bill to provide for the refunding of railway indebtedness to the government has been delayed by reluctance to consider a bill for the relief of railways before doing something for the farmer and if a farm bill should be passed it is not likely that Congress would remain in session long enough to pass the railroad bill.

Hearings before the House committee on interstate and foreign commerce on the Parker consolidation bill were brought to a close on June 18 at the conclusion of the testimony of Alfred P. Thom, general counsel of the Association of Railway Executives, and Chairman Parker announced that further consideration of the bill would be put over until the next session. Meanwhile the testimony taken at the hearings will be printed and members of the committee as well as other Representatives will have an opportunity to study it.

Mr. Thom suggested several amendments to the bill, mainly for the purpose of clarifying its phraseology, and was questioned by members of the committee. Incidentally he took occasion to express the hope that the committee would sometime consider a plan for the reorganization of the Interstate Commerce Commission, as proposed some years ago by the executives' association, with regional commission to have jurisdiction over matters arising in their own districts, subject to appeal to the commission at Washington. "You will be under compulsion some day," he said, "to carry the administration of this law closer to the people."

"You are adding duties to those already imposed on the commission and you must make provision to take some of the details of the administration of the act out of the hands of the commission."

During consideration of the farm relief bill in the Senate on June 22 Senator Harris of Georgia offered an amendment to reduce the export rates on wheat, cotton and corn to 50 per cent of the present rates provided they are to be exported in vessels owned by the United States and operated by the Emergency Fleet Corporation, but a vote on it was postponed.

Multiple Pressure Locomotive Being Tested in Germany

BERLIN, Germany.

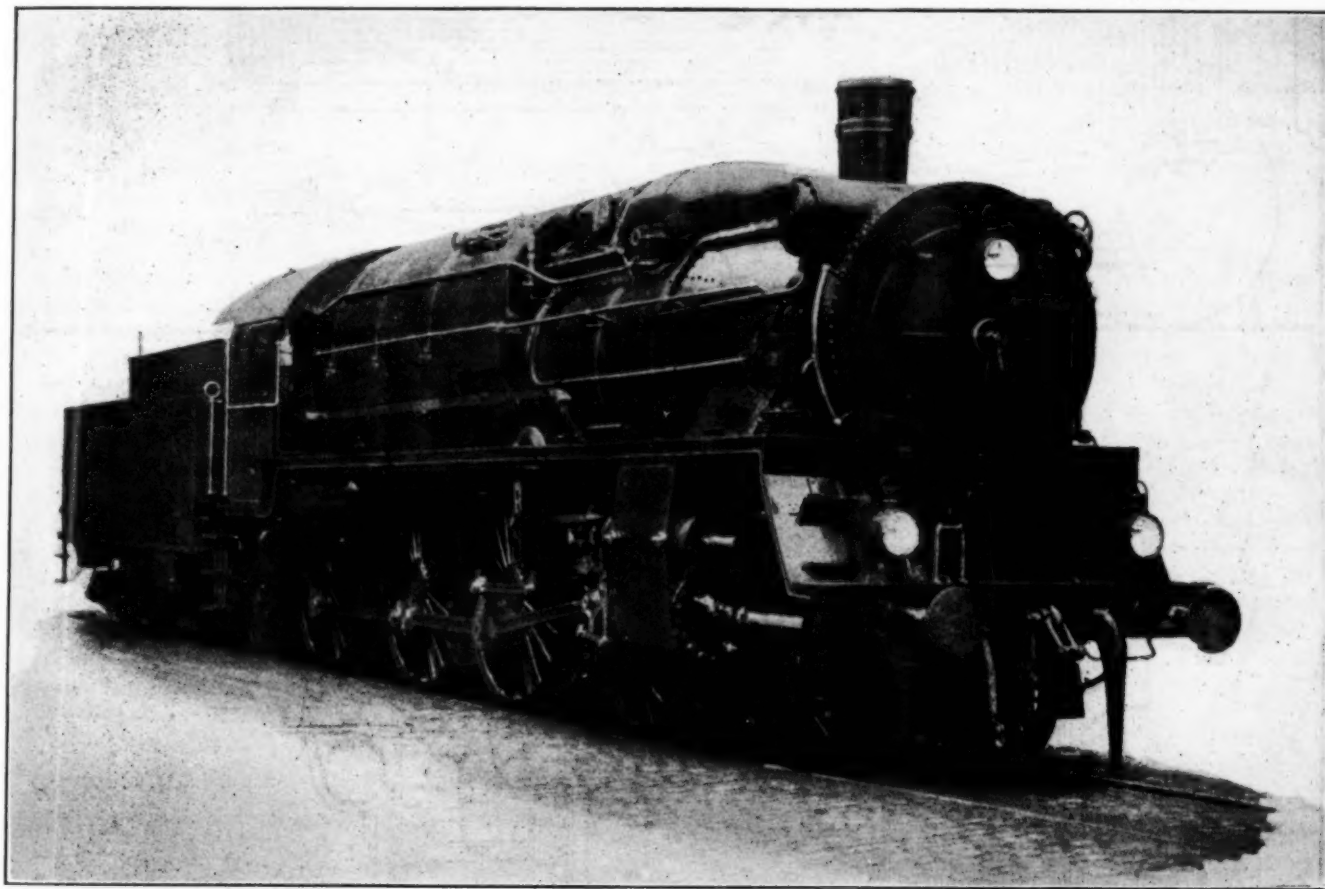
IN an article reviewing the tendencies in locomotive design during 1925, published in the January 2, 1926, issue of the *Railway Age*, page 47, was included a brief description of a locomotive built in Germany which generates steam at two pressures. This locomotive, known as the Henschel multiple pressure compound locomotive, is of the 4-6-0 type and has three cylinders. The original design was developed by the late Dr. Wilhelm Schmidt, inventor of the Schmidt superheater, and was built jointly by Henschel & Sohn, Kassel, Germany, and the Schmidt Superheater Company. This locomotive was exhibited at the railway exposition held last year at Munich, Germany, and has been undergoing extensive tests on the German State Railways since that time. It was built primarily for experimental purposes with the object of determining the practical possibilities of what has for a considerable time been considered as

firebox. The lower ends of the tubes, forming the side and end walls, set in a hollow frame which supports the grates. Around the top of the firebox is a second hollow

TABLE OF DIMENSIONS AND PROPORTIONS OF THE 4-6-0 HIGH PRESSURE
THREE-CYLINDER LOCOMOTIVE

Railroad	German State Railways
Builders	{ Henschel & Sohn Schmidt Superheater Co.
Type of locomotive.....	4-6-0
Cylinders, diameter and stroke.....	{ 1—11.4 in. by 24.8 in. 2—19.7 in. by 24.8 in.
Valve gear, type.....	Walschaert
Wheels, diameter outside tires:	
Driving	78 in.
Front truck	39.4 in.
Boiler:	
Steam pressure, high pressure section.....	880 lb. per sq. in.
Steam pressure, low pressure section.....	200 lb. per sq. in.
Heating surfaces:	
Firebox (including all fire heated surfaces).....	1,000 sq. ft.
Heating coils in drum.....	1,312 sq. ft.
Tubes and flues, low pressure section.....	2,061 sq. ft.

frame in the lower side of which are set the upper ends of the side and end wall tubes and on the inner side the tubes which extend across the top of the firebox. This system of tubes is filled with water about half way to the upper frame. It can withstand the high temperature of



Multiple Pressure Compound Locomotive Built Jointly by Henschel & Son and the Schmidt Superheater Company

theoretically most desirable, namely, the employment of extremely high pressure steam in combination with two-stage expansion and superheat.

Superheated steam at about 880 lb. pressure per sq. in. is used in a single high-pressure cylinder and the exhaust from this cylinder at about 200 lb. per sq. in., is combined with superheated steam at the same pressure drawn from the low pressure section of the boiler, to supply the two low pressure cylinders.

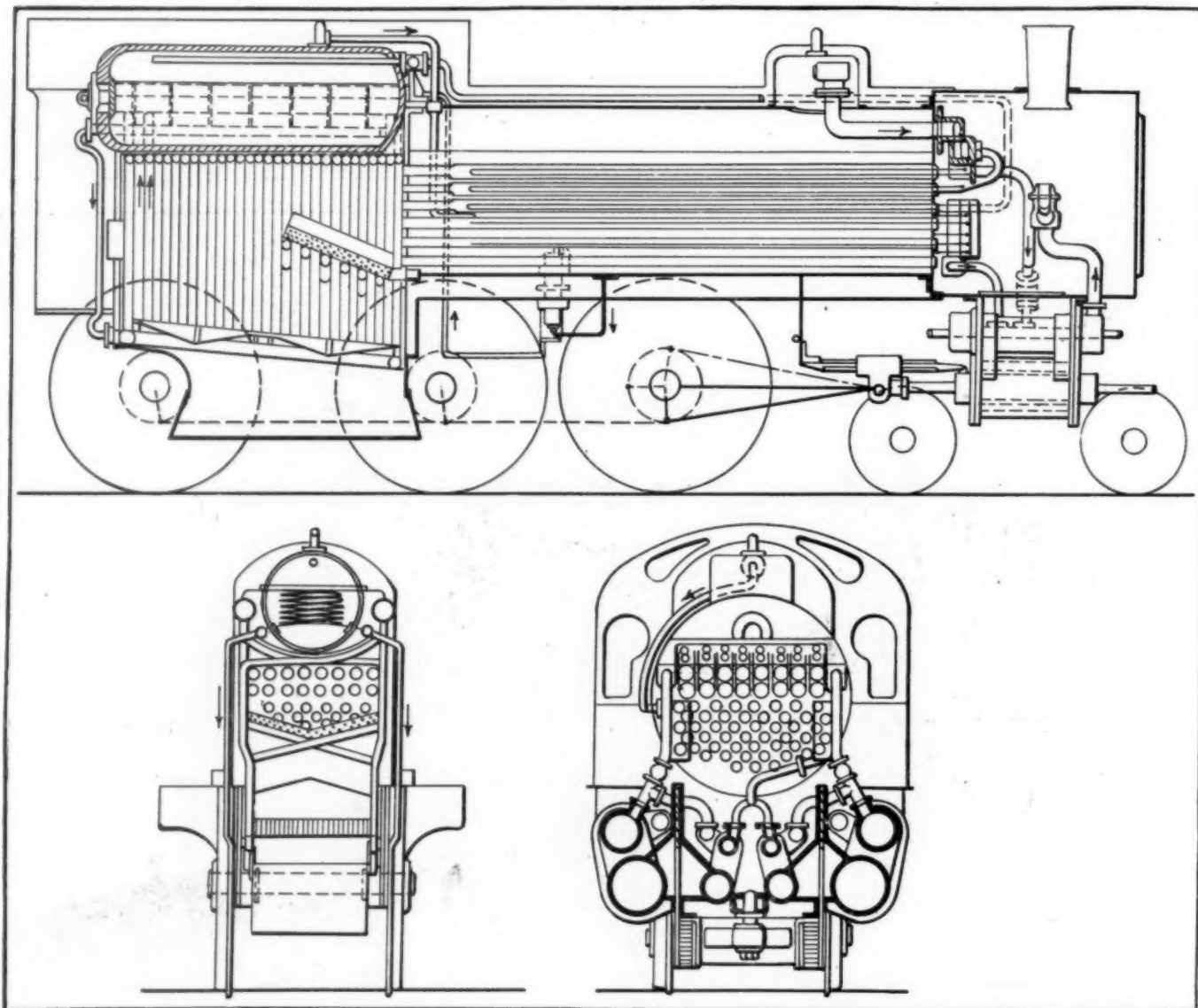
The high pressure section is a water tube boiler similar in many respects to the Brotan type. Two-inch tubes set closely together form the sides, end walls and top of the

the firebox on account of the small diameter of the tubes and the absence of scale. The small tube diameter is permissible on account of the fact that the small bubbles of steam generated from the small amount of water in each tube take about one-sixth of the space of the steam bubbles created in locomotive boilers of the usual design. The comparatively small space taken by the rising bubbles insures a good transmission of heat between the fire and the water. This system of tubes produces steam at about 1,320 lb. per sq. in. The steam from this section is passed into a system of pipes placed inside a large drum which is centrally located above the top of the firebox. This drum

is not exposed to the combustion gases, but is heated from the inside by the system of pipes carrying steam at 1,320 lb. pressure. The heat from these pipes is transferred to the water in the drum surrounding the pipes, causing the steam in the piping system to condense. This transfer of heat generates steam in the drum at about 880 lb. pressure. The lower ends of the piping system to the inside of the drum are connected by outside pipes to the lower frame of the firebox which carries the two-inch tubes of the side and end walls. By this arrangement the condensate from the heating pipes in the drum is returned to the tubes forming the firebox and is used over again. The high pressure section of the boiler thus forms a

wall of the drum will, of course, have an insulating effect.

The steam at 880 lb. pressure generated in the drum is piped through a superheater, the tubes of which are located in the usual manner inside of the tubes of the low pressure cylindrical boiler, to a high pressure cylinder. This cylinder is placed midway between the two outside or low pressure cylinders and drives direct to the front driving axle. The steam is exhausted from the high pressure cylinder at about 200 lb. to the two low pressure cylinders. This exhaust steam, however, is supplemented by steam from the low pressure section of the boiler, superheated in the usual way by a second superheater, the units of which are also located in the tubes of the low



Elevation and Cross Section of the Multiple Pressure Locomotive

closed circuit in which steam is generated from distilled water. The utilization of distilled water, of course, eliminates any possibility of scale being formed. Thus one of the greatest difficulties in the operation of the ordinary locomotive is overcome.

The drum is fed with ordinary feedwater from the tank on the tender and trouble may be expected from scale being deposited on the heating coils. For this reason the designers may be required to apply to the locomotive feedwater treating equipment or a device for removing scale from the drum. Any scale deposited on the inside

pressure boiler. All the available space in the smoke box is taken up by the two superheaters.

All three cylinders are placed in a horizontal plane and are connected to the front drivers with cranks at 120 deg. They are equipped with piston valves and extended piston rods which are considered indispensable in Germany. It is reported that the design of the two stuffing boxes of the high pressure cylinder may have to be changed due to the difficulties encountered working under 850 lb. pressure. Complete tests are yet to be made, but it is reported that preliminary tests show an unusual economy in steam.

Freight Station Officers Meet in Detroit, Mich.

The better handling of bills of lading and shippers' orders urged to increase efficiency

THE sixth annual session of the Freight Station section of the Operating Division of the American Railway Association, which was held in Detroit, Mich., on June 15-18, was attended by 700 members. Particular attention was given the reducing errors in way-billing and the improper packing and stowing of fruits and vegetables. Terminal charges, bills of lading and public relations between the agent and the public also were discussed. The objective of the entire meeting was better service to the public.

Officers elected for the ensuing year were: Chairman, Frank Laughlin, agent of the Erie, at Cleveland, Ohio; first vice-president, George B. Ingersoll agent of the Wabash, at Chicago; second vice-chairman, J. H. Rogers of the Long Island, at Long Island City, N. Y.

Report of Committee on Operating

The Committee on Operating, in considering the topics Improper Packages, Packing and Stowing Fruits and Vegetables, recommended that paragraph 5 of the Loading and Stowing rules be changed. The committee felt that definite rules should be in effect which would cover the best practice in loading and stowing the various classes of containers. The character of the package and its contents should determine the method of loading. Originating carriers should provide sufficient supervision to educate shippers in the use of designated containers and the proper packing of commodities therein, as well as the loading, stowing and bracing in the car.

In considering the storing of "order notify" cars in a public bonded warehouse in the name of the railroad agent, the committee felt that refused or unclaimed property, stored on the carrier's premises, or stored by the carrier in a public or licensed warehouse, should be stored in the name of the consignee or owner of the property as indicated by the bill of lading contract and should then be subject to the common law governing public warehouses.

Report of Committee on Station Settlements

As a means of eliminating or reducing errors in way-billing, particularly those which mean the handling of over and undercharge corrections, the committee on station settlements recommended:

1. That receiving clerks should see that commodities are properly described insofar as possible by the outside examination of containers, and that the container be properly described on the shipping order, whether box, bundle, crate, or carton, or if loose, so specified. Care should be taken to see that the commodity is described by its proper name, not by its trade name. It was also recommended that there should be more careful weighing and a closer supervision of the weighing of both carload and less than carload freight.

3. The revision of all computations by the use of calculating machines before the billing leaves the issuing office.

4. The simplification of tariffs.

5. That a campaign be conducted among shipping clerks and shippers for the purpose of impressing upon them the importance of clear and legible bills of lading.

6. A thorough revision of all outbound billing by checking shipping tickets against the waybill.

7. Through billing.

To reduce corrections and correspondence at junction points, it was recommended that disputed divisions be revised and agreements reached by interested carriers.

Report of Committee on Freight Claim Prevention

Although the Committee on Freight Claim Prevention reported satisfactory results in this work, it was felt that the formation of a prevention committee within the freight station section would enable the agents to do broader work which will have the ultimate effect of reducing certain items which have not responded to efforts to prevent them. If an effort was made to learn the exact reason for each damage at the time of unloading, it was felt that the members may learn what can be done to prevent it. If the information secured at unloading points were used, two things could be done. In the first place, the members would be able to show the loader what may be wrong; and in the second, the members could learn from the good loaders, who have little damage, what method they use, and circulate this information through the several national committees handling the subject of loading. The committee appointed a subcommittee to serve as a means of contact through which the various angles of freight claim subjects can be discussed later in more detail as the needs arise.

Where there is doubt as to whether the shipper is loading freight properly and safely, the committee suggested that a number of these shipments be traced to the destination for an out-turned check, which, when reported back, may develop something that has been overlooked by the committee when the inspection was made at the time the shipment was loaded and forwarded. The tracing of a certain number of these carloads and the transmitting of the report of out-turned check showing the cause of damage, etc., it was felt, would be of great help towards convincing the shipper that changes in his method of loading are necessary, would be beneficial to him as well as the railroad and would be the means of making satisfied customers when the goods arriving at the destination are in good condition.

"Terminal Costs on Less Than Carload Traffic"

In an address on "Terminal Costs on Less Than Carload Traffic," William C. Maxwell, vice-president in charge of traffic of the Wabash, outlined the work done by the railroads on this subject since 1914. An abstract of his address follows:

The first study of terminal costs on less-than-carload freight of which I have any knowledge, was made in Nebraska in 1914. It was found that the direct terminal cost (platform, clerical and switching) on shipments from Lincoln, Neb., to a number of destinations was 10.92 cents per 100 lb. for two terminals, and of this, about half, or 5.46 cents would represent the cost at Lincoln, Neb.

The question of a proper formula was given extended consideration, and finally a clear and concise formula, which the carriers felt would develop facts that would be convincing, was adopted. This formula, supplemented from time to time, is in general use today. It was designed to assign or allocate the various items of direct cost involved in the handling of less-than-carload traffic, and provided for subdivision of the costs

under three major heads—platform costs, clerical costs, switching and other costs.

Platform costs covered the expense of handling the freight to and from the car, and would consist of wages paid to the handlers. All of this expense is assignable to less-than-carload traffic, except in cases where carload traffic was handled over the platform. Time studies were made and the cost was divided between the less-than-carload and carload traffic upon the basis of the time employed in the handling of each. The platform cost was not difficult to ascertain.

Clerical costs covered wages paid to office clerks. Many clerks devoted time to both less than carload and carload freight and it was concluded to apportion these expenses upon the basis of the number of consignments of each.

Switching and other costs involved many elements, and time studies were invariably necessary to obtain a fair method of dividing the expense. At many stations switching is performed by regularly assigned engines, while at the smaller stations it is performed by road-train engines, which called for separate treatment.

In 1916 and 1917, we made cost studies at 114 cities throughout Ohio, Indiana, Michigan and Illinois. In these studies were included large cities such as Chicago, cities of 50,000 to 100,000, towns of 5,000 to 10,000, and even villages where the way-freight stops and unloads a few packages. Much to our astonishment, the costs at the villages were as much as at any of the large cities.

It is interesting to note the steadily increasing costs as revealed by those studies and some that have been made since, as follows:

Year	Territory	Number of stations studied	Average direct cost per 100 lb. for one terminal
1916	Central Freight Ass'n.	8	5.49 cents
1917	Michigan	38	7.30 cents
1917	Illinois	68	8.67 cents
1918	Eastern Trunk Line	83	10.40 cents
1921	South	5	11.54 cents
1923	Western Trunk Line	100	13.67 cents

While an exact measure of increase in costs cannot be arrived at, due to the fact that no territory has had two different studies, still I think the above sufficient to denote a substantial increase in 1923 as compared with 1916 because a very large part of the cost consists of wages, and they have received quite uniform treatment in all territories.

However, two studies were made at specific points during the years mentioned, which furnish some measure for comparison, as follows:

	1914	1917	1923	Per cent of Increase
Lincoln, Neb. (C. B. & Q.)	5.45 cents	...	15.02 cents	175
Springfield, Ill. (Wabash)	...	6.74 cents	12.50 cents	85

I believe that the increase in these costs, 1914 to 1923, would be about 100 to 125 per cent, as compared with an increase per ton in operating cost of all freight of about 90 per cent. This disparity in the increase is, of course, accounted for by the fact that the handling of less-than-carload freight involves, to a large extent, manual labor, with little opportunity for labor-saving methods or other economies as compared with carload freight.

It is also interesting to observe that in the Western Trunk Line study in 1923 there is a great variation in costs and that very high costs are found at the smaller stations, to wit:

Population of station	Direct costs per cwt. one terminal
10 cities over 100,000	14.40 cents
9 cities 50,000 to 100,000	12.81 cents
15 cities 25,000 to 50,000	11.35 cents
18 cities 10,000 to 25,000	13.95 cents
34 towns under 4,000	18.22 cents

I think the relations of these costs can be explained to some extent by the fact that in the cities over 50,000 there are more or less operating difficulties and at times congestion which exert a retarding influence and directly affect the expense. At the small towns where road-haul trains perform the switching service, the business is very sparse, but prompt and reliable service must be retained in the public interest.

Now as to the conversion of less-than-carload terminal costs into rates. The most recent terminal cost study was that of the western trunk line railroads covering 100 stations throughout Illinois, Wisconsin, Minnesota, Iowa, Nebraska, Kansas, Oklahoma and Missouri. It shows direct terminal cost of 13.67 cents per 100 lb. for one terminal. This makes 27.34 cents as the direct terminal cost for two terminals.

The average revenue on less-than-carload freight is third class. The third class rates are 67 to 70 per cent of first class, 70 per cent being the figure used by the Commission in all recent cases. Therefore, it would be necessary to have a first class rate of approximately 39 cents for the first five miles to clear the direct terminal costs at two terminals. These are only the

direct terminal costs, and there is nothing included for investment in property, maintenance or taxes or other overhead.

Therefore, materially more than 40 cents on first class less-than-carload freight for the first five mile haul is necessary to yield any profit.

Some of the present first class rates for 5 miles are:

Central Freight Ass'n territory	29 cents
New England	Zone A 32 cents
	Zone B 35 cents
Iowa	21 cents
Wisconsin	18½ cents

All of these rates are actually below the cost.

I also direct attention to the fact that in the large cities, the carriers, in addition to their direct terminal costs on this class of traffic, make a great many absorptions from their revenue. These include: Charges to or from outlying or sub-stations, trap car service, tunnel and lighter at Chicago, by the use at St. Louis for instance, of numerous off-track stations of transfer companies, which involves the use of two expensive facilities in the one city before delivery or receipt is affected. In other words, there are three terminal costs instead of two on a large part of the traffic to and from St. Louis and service in New York Harbor.

All of these auxiliary services might well be given careful study and investigation so that each shipper will be given approximately the same service for the rate he pays.

You may wonder why this condition is permitted to exist, and I think there are two important reasons: 1. As stated above the terminal expenses for less-than-carload freight have increased at a relatively greater ratio than for carload freight, and the significance of this has not become fully known. 2. Many carload articles are included in the same class as less than carload articles, and if that class is increased, the carload rate would likewise be increased, and this could not be sustained solely for the purpose of obtaining additional revenue on less-than-carload freight.

It is my firm belief that the rates for less-than-carload freight should be completely segregated from the rates on carload freight, because there is an entirely different service, an entirely different set of terminal costs to deal with, and in addition, the following further differences characteristic of less-than-carload freight: a. Light loading of cars. b. Preferred and expedited service. c. Relatively heavy claim payments. d. Large investments in property and facilities located as a rule in the business centers of cities and towns on high-priced, valuable property.

Carload service is a more purely transportation proposition and does not involve these expensive factors.

The official classification today has approximately 56 items of carload freight rated first class, 311 items of carload freight rated second class, 449 items of carload freight rated third class, and 881 items of carload freight rated fourth class. Therefore, it is evident that if the rates on less-than-carload freight were fixed under the present classification so as to be representative of the costs and character of service rendered, it would probably be a marked injustice to many carload shippers whose freight rates would be advanced because their freight is rated in the less-than-carload classes. On the other hand, the railroads are deprived of revenue on less-than-carload traffic because the segregation of carload and less-than-carload ratings is not made.

A simple way to change this entire situation without making a single change in the classification is to issue a separate tariff of five classes for less-than-carload freight and a separate tariff of ten classes for carload freight, and to continue to apply the classification ratings as they exist today. Under this plan we would come to deal with each class of traffic more nearly on its merits.

AUTOMATIC BLOCK SIGNALS ought to be numbered for the convenience of the engineman, in a consecutive series instead of with numbers which are based on the location, as related to mile posts or to distance from a given point. This is one of the recommendations in a paper by Percy Rosewarne, a locomotive runner of the London & North Eastern which has just taken a prize of five guineas, given by the general manager of the railway. Mr. Rosewarne notes the superiority of numbers which are cut out of metal, and fixed to the side of the post, so as to be easily readable at night. Among various recommendations applicable more particularly to English practice, the paper includes also one that where landmarks are scarce, the approach to a fixed signal should be made prominent by an artificial landmark; and he proposes for the approach both to distant and home signals, a strip of ballast 60 ft. long by 3 ft. wide, whitewashed.

Big Four Operates Calf Special

Boys' and girls' clubs used as a means for introducing the dairy business on the Cairo division

AS a means of forming a contact for carrying on agricultural extension work the Cleveland, Cincinnati, Chicago & St. Louis has established Boys' and Girls' Dairy Calf clubs which will serve as an object lesson to the farmers of the various communities in Southern Illinois. A special dairy calf club train was operated over the Cairo division from May 1 to 8, for the purpose of establishing interest in dairy development



The Southern Illinois Dairy Calf Club Special Operated Over the Big Four

and to influence farmers to diversify agricultural production of that territory. Pure bred calves were given to several members of each club. The State University, the National Dairy Council, the Illinois Department of Agriculture and other organizations co-operated.

Before the train was operated 11 communities signified their desire to co-operate and immediately organized clubs under specifications outlined by the University of Illinois and the United States Department of Agriculture. Local



Purebred Jersey Club at Robinson, Ill., Sponsored by the Crawford County Breeders Association

bankers or business men's organizations agreed to finance the clubs, furnish the leadership and sponsor the members during the three years for which they enlisted in the work. Prior to the operation of the train, 142 boys and girls were enrolled and before the delivery of the calves was accomplished 20 more boys and girls had filed application for membership in the clubs, while several additional communities had requested assistance in order that they, too, might have clubs.

The trains were run in order that educational exhibits, the calves and demonstration animals, together with the

necessary lecturers to conduct dairy day programs, might be carried to the various communities. Five cars were especially equipped for the installation of exhibits and the housing of the demonstration cows and calves which were distributed to club members. A flat car was equipped with fencing in order that the cows used in demonstrations might be shown without the necessity of unloading them from the train. Two cars were sent to Urbana where the exhibits of the University of Illinois were established; one car went to Chicago for the installation of the exhibits of the National Dairy Council and the balance of the equipment went to Danville, Ill., where the train was assembled on April 30.

The exhibits and the cars were arranged with a continuity which made it possible for the visitor to the train to glean a comprehensive understanding of the message



Interior of First Car, Showing University of Illinois Exhibit

the train carried, and to appreciate that there was a very distinct connection between the production of farm crops, the feeding and the breeding of livestock and the consumption of dairy products. The first car the visitors entered contained the exhibits of the University of Illinois, the New York Central lines and the Illinois Department of Agriculture. The University's exhibits centered on the production of dairy feeds on southern Illinois farms. Three typical farms were described and the theme of the whole exhibit was related to the production of crops and their utilization in rations for livestock.

The second section of the University's exhibit dealt with the need of the careful study of the rules for feeding livestock. Ten rules for feeding were prescribed and the suggested rations were shown. The New York Central featured its refrigerator cars used in transporting dairy products. A model "M.D.T." car, one-tenth the size of the standard car was displayed. The Illinois Department of Agriculture developed the value of dairy products in the human diet. Two mechanical devices in operation were used to show the strength-developing qualities of milk. Literature on the subject of dairy economy and sanitation and pure bred sires was provided for distribution.

Three pure bred cows from the herds of the University

of Illinois were carried to illustrate the type most desired in the breed. Two baggage cars and a stock car were used to house the calves which were distributed to the boys' and girls' club members. Arrangements were made in the baggage cars which permitted visitors to file through an aisle and view the calves before they were allotted to the club members.

Dairy Products

The story of the value of dairy products as food was thoroughly developed in a car especially equipped by the National Dairy Council. The exhibits consisted of



W. S. O'Hair, Illinois Department of Agriculture and President of the Illinois Dairymen's Association Addressing Train Visitors

numerous features of interest to men, women and children. Posters, pictures, charts and mechanical devices in operation graphically developed the story of milk from the cow to the human body.

Dairy day programs were staged on arrival of the train at each of the stops regularly scheduled. Addresses were made by representatives of the railroads, the University of Illinois, the Illinois Dairymen's Association, the Illinois Department of Agriculture, and the National Dairy Council.



A Trailer Load of Westbound Freight at Erie Inland Station, Greenwich Street, New York

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended June 12 amounted to 1,060,214 cars, approximately 20,000 cars less than the loading in the last week of May but an increase of 70,341 cars as compared with the corresponding week of last year. As compared with the corresponding week of 1924 this was an increase of 157,622 cars. Increases were shown as compared with last year in all districts and in all classes of commodities, the largest increases being shown in the loading of coal, which was 18,179 cars more than that for the corresponding week of last year, and in miscellaneous freight, which showed an increase of 24,573 cars. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

REVENUE FREIGHT CAR LOADING

Week Ended Saturday, June 12, 1926

Districts	1926	1925	1924
Eastern	255,081	236,146	214,944
Allegheny	215,553	201,403	184,579
Pocahontas	58,668	51,737	38,235
Southern	148,055	140,768	126,104
Northwestern	165,334	150,800	146,269
Central Western	143,262	135,218	136,321
Southwestern	74,261	73,801	56,140
Total Western Districts	382,857	359,819	338,720
Total all roads	1,060,214	989,873	902,592
Commodities			
Grain and Grain Products	40,690	35,697	37,713
Live Stock	28,182	26,041	29,634
Coal	177,477	159,298	138,240
Coke	11,534	9,207	7,554
Forest Products	76,570	73,469	69,053
Ore	68,978	61,281	60,115
Mdse., l. c. l.	264,382	257,052	241,657
Miscellaneous	392,401	367,828	318,626
June 12	1,060,214	989,873	902,592
June 5	945,964	998,243	910,793
May 29	1,081,164	913,087	820,551
May 22	1,039,385	987,306	918,224
May 15	1,030,162	985,879	913,201
Cumulative total 24 weeks	22,930,492	22,350,734	21,373,355

The freight car surplus for the week ending June 7 averaged 270,841 cars, an increase of 12,885 cars as compared with the preceding week. This included 79,013 coal cars and 142,792 box cars.

Car Loading in Canada

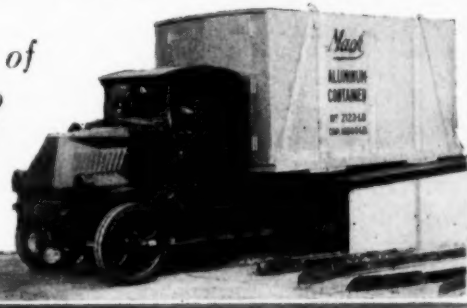
Revenue car loadings at stations in Canada for the week ended June 12 totaled 62,430, an increase of nearly 1,000 cars over the previous week. The large increase in coal loadings over last year is due to labor troubles in 1925 and in grain due to the larger crop in 1925 than in 1924, also heavier loading of forest products, an increase of 1,123 cars of merchandise and an increase of 2,843 cars of miscellaneous freight made a total increase of 12,477 cars over the same week last year.

Commodities	Total for Canada			Cumulative Totals to Date	
	June 12	June 5	June 13	1926	1925
Grain & Grain Products ..	7,058	7,216	4,749	162,407	137,273
Live Stock	1,891	1,793	3,044	46,034	50,448
Coal	6,339	5,902	1,733	107,124	82,246
Coke	231	299	138	9,563	6,552
Lumber	4,031	3,903	4,261	79,143	77,755
Pulpwood	2,327	1,943	1,992	72,396	71,498
Pulp and Paper	2,417	2,388	1,973	58,720	48,617
Other Forest Products ...	3,023	3,253	2,594	77,733	69,078
Ore	1,993	1,882	1,315	35,280	28,847
Merchandise, L. C. L. ...	17,081	16,782	15,958	361,407	343,516
Miscellaneous	16,039	16,226	13,196	291,254	257,482
Total Cars Loaded	62,430	61,587	49,953	1,301,161	1,173,312
Total Cars Rec'd From Connections	37,186	30,631	31,070	855,730	766,511

MOTOR TRANSPORT SECTION



*Published in the fourth issue of
each month and devoted to
the co-ordination of rail-
way and highway service*



Motor Transport Officers Have Successful First Meeting

*Fifty-one roads have 121 representatives present—Perma-
nent organization planned*

THE initial step toward the formation of a permanent organization of railroad motor transport officers was taken at a meeting at the Hotel Marlborough-Blenheim in Atlantic City on June 11, as was briefly reported in the *Daily Railway Age* of June 12. At this meeting the chairman was authorized to appoint a committee to arrange for another meeting in the near future and to take whatever steps are necessary toward organizing an association of railroad officers engaged in motor transport work.

The Atlantic City meeting was called by A. P. Russell, president of the New England Transportation Company (New York, New Haven & Hartford), H. F. Fritch, president of the Boston & Maine Transportation Company, and F. J. Scarr, supervisor of motor service of the Pennsylvania. Notices of the meeting were sent to roads throughout this country and Canada, and the response was general, as was testified by the attendance, which totaled 121, representing 51 different railroads.

The meeting was of a strictly informal character and, in order to promote free discussion of the questions, it was decided that no detailed record of the actual discussion, except where specifically authorized by the speaker, would be made public except through the minutes of the meeting, copies of which will be mailed to all who attended. Any railroad executive who desires a copy of these minutes may obtain it by addressing the secretary of the meeting.

F. J. Scarr, supervisor of motor service of the Pennsylvania, called the meeting to order and W. H. Lyford, vice-president and general counsel of the Chicago & Eastern Illinois, was elected chairman. J. G. Lyne, associate editor of the *Railway Age*, was chosen to serve as secretary.

After a few introductory remarks, the chairman called upon Samuel O. Dunn, editor of the *Railway Age*, the first speaker on the program. Mr. Dunn dwelt upon the general aspects of the relationship of motor transport to the railroads, calling attention to the fact that the railways have suffered a loss of \$300,000,000 in passenger business since 1920, largely due to motor vehicle competition. The railroads were, he said, looking upon this competition

from different points of view and were proceeding along different lines to meet it. In view of the great aid which the various associations of railroad men have given toward progress in railroading in other departments, he believed that some sort of an organization for an exchange of experiences in motor transport activities might be helpful.

The next speaker called upon was G. C. Woodruff, assistant freight traffic manager of the New York Central, who spoke on Freight Transportation by Rail and Motor Vehicle. Mr. Woodruff's discussion, while extemporaneous, was of a thorough-going nature and based upon the extensive experience which his road has had in this field. He was called upon to answer many questions from interested inquirers in attendance.

E. J. Phillips, vice-president of the New England Transportation Company and counsel for the New York, New Haven & Hartford, next spoke on the bus operations of his company and the situation which gave rise to them—viz., a falling off in traffic on some rail lines by more than 50 per cent within a brief period and, furthermore, the possibility of using the bus as a substitute for light traffic trains at a great saving to the railroad. Mr. Phillips brought out the fact, however, that in some places the installation of bus service apparently did not affect rail transportation appreciably, but rather that the buses drew their patronage from persons who otherwise would use private automobiles. This observation was borne out by several persons present.

A. P. Thom, Jr., general solicitor of the Association of Railway Executives, next spoke on Proposed Motor Vehicle Regulation and the Significance of the Impending Interstate Commerce Commission Investigation.

A. P. Thom, Jr., on Regulation

"While transportation by motor vehicles on the highways is," Mr. Thom said, "stimulating to other forms of transportation, it is becoming more and more apparent that its true mission is to supplement and not to injure or destroy existing forms of transportation that are performing an essential service. Manifestly it cannot be in the

public interest that existing transportation facilities, which are adequate and are essential to the communities they serve, should be broken down or impaired by new facilities which constitute no adequate substitute."

Mr. Thom said that a question had been raised as to whether a rail carrier could engage in highway transportation under its charter. He said that most charters were broad enough to permit direct motor bus and truck operation. He called attention to the fact, however, that if the railroad does this, motor equipment will come under the general mortgage obligation of the railroad.

"If a railroad itself engages in motor transportation," he said, "it would be required to pay the scale of taxes exacted from the railroad." If, however, it operated motor vehicles in interstate commerce through a separate company the highway carrier would pay taxes on the same basis as other highway carriers.

He contended that the public was entitled to protection against financially irresponsible highway carriers and against their undermining the efficiency of existing transportation agencies such as the railways. There is, he said, virtual agreement that some such regulation is necessary. The state commissions, with the exception of Minnesota, the bus division of the American Automobile Association, the American Electric Railway Association, the Association of Railway Executives and the United States Bureau of Public Roads have agreed that some regulation is necessary. Only the motor truck operators are opposing regulation and they are by no means unanimous.

Mr. Thom summed up his remarks as follows:

1. The development of motor transportation on the highways has now assumed an importance which requires it to be recognized as an essential part of our transportation system.

2. Its proper place, in the service of the public, must be ascertained and defined. While inevitably such transportation will, to some extent, be in competition with rail transportation, yet the true mission of this new form of transportation is to supplement, and not to injure or destroy, existing forms of transportation that are performing an essential public service.

3. The railroads are vitally interested in the question of motor transportation both from the viewpoint of competition and from the viewpoint of the rail carrier itself engaging in that mode of transportation.

4. Whether a rail carrier should itself engage in motor transportation or whether it should contract with or form a separate corporation for the purpose, is a matter generally of policy. Most railroad charters are broad enough to confer authority on the railroad company to furnish this class of service.

5. The development of this mode of transportation has reached the stage where interstate regulation is necessary.

6. Both Class A (specific routes) and Class B (individual contract) motor common carriers, including buses and trucks, are susceptible of regulation and should be included in any system of regulation which is enacted.

7. Inasmuch as the problem is, in many of its controlling aspects, local in character, it would be wise to authorize existing state agencies, or some other agency of a local nature, to administer the system of regulation prescribed by Congress, with appellate jurisdiction in the Interstate Commerce Commission to assure uniformity of regulation.

8. Developments demonstrate that the problem of proper regulation of interstate commerce by motor vehicles on the highways is recognized as pressing and important. This is indicated by statements which appear from time to time in the public press and by the recent decision of the Interstate Commerce Commission to institute an investi-

gation in order to inform itself and make recommendations to Congress looking to regulation of the motor transportation industry.

The last speaker at the morning session was S. B. Moore of Houston, Tex., who spoke on the relationship of highway rolling stock and the road bed. He was of the opinion that heavy vehicular operation over highways would ultimately be abolished by legislative action because of the damaging effect to the highway surface.

At the afternoon session F. S. Hobbs, manager of the New England Transportation Company, was the first speaker. He gave a detailed account of the organization and performance of his company and the rapidity with which it has grown. Mr. Hobbs likewise was questioned at length by many of the persons in attendance.

Another Meeting Soon

Following this discussion, Chairman Lyford asked permission to suspend the order of business which called for the consideration of two or three other specific questions, in order that there might be ample time for considering the matter of another railroad motor transport meeting and the formation of a permanent organization.

After several varying viewpoints were expressed, it was decided virtually without dissent to hold the next meeting in the vicinity of Providence, R. I., some time within the next two months. It was the thought of the gathering that this would afford an opportunity for studying the intensive railroad motor vehicle operations of the New Haven and the Boston & Maine, with the possibility of proceeding thence to the New York Central to observe some of its uses of the motor truck in freight service. After a further discussion, widely participated in, it was decided to empower the chairman to call upon each of the following roads to designate a member for a steering committee for the organization:

Atchison, Topeka & Santa Fe; Baltimore & Ohio; Boston & Maine; Chesapeake & Ohio; Chicago & Alton; Chicago & North Western; Chicago, Burlington & Quincy; Chicago Great Western; Denver & Rio Grande Western; Erie; Missouri Pacific; New York Central; New York, New Haven & Hartford; Pennsylvania; Reading; Seaboard Air Line; Southern Pacific; Spokane, Portland & Seattle.

As soon as this committee is formed it will meet and select a chairman and will then proceed to take such steps as it sees fit toward drafting a plan for a permanent railroad motor transport organization, which plan it will submit to the delegates who attend the next meeting in Providence or vicinity. Arrangements for this meeting will likewise devolve upon this committee.



Trailer and Tractor in Lehigh Valley and Erie Freight Service, New York



State Commissioners Are Watching Highway Transportation Developments Closely

State Commissioners Comment on Highway Transport

Granting of permission to operate, highway rates, profits, and attitude on taxation and regulation discussed

REPLYING to a questionnaire sent to them by the *Railway Age*, officers of the regulatory commissions having jurisdiction over transportation matters in 19 states, have commented on conditions in their respective states affecting highway transportation. The situation with respect to the extent of the regulation of the highway carriers within the states has been described by the *Railway Age* in previous issues. It has been noted that only 39 states have such regulatory laws affecting bus and truck operators. The purpose of the present investigation was to obtain an inside picture, as it were, of certain aspects of bus and truck operation by companies independent of and generally competitive with the railways.

The comments solicited were upon five points. First, the *Railway Age* asked what considerations have had the greatest weight in determining the decisions of the commissions on applications from independent bus and truck operators for certificates of convenience and necessity to do a transportation business on the highways; where the line has been drawn in deciding on the "necessity" as well as the "convenience" of a proposed highway operation; and the attitude shown toward applications of railways for permission to withdraw trains where operations are unprofitable. The second question dealt with the level of rates charged by motor bus and truck operators for their service as compared with rates for transportation on the railways. Third, a request was made for information as it had come to the commissions of the profit, or lack of profit, accruing to the operators of buses and trucks, and fourth, what experience had tended to show to be the limits of the mileage zones in which highway transportation can be carried on by common carriers operating over scheduled routes with expectation of profit. Finally, the opinions of the commissioners were solicited as to the effect that a system of regulation calling for complete accounts of operations such as the railways must provide, would have upon the operations of independent bus and truck concerns, and similarly the effect that a rate of taxation of one cent a ton-mile as pro-

posed by the American Electric Railway Association would have.

An effort was made to secure information along these lines from representative states in all parts of the United States. This attempt to cover the country as completely as possible resulted in the securing of replies with the comments asked from five states in the eastern part of the country, six states in the middle west, and seven states in the western district. In addition to these, one southern state was able to furnish information in regard to the bus and truck operations within its boundaries. The lack of such information from more states in the south was due in part, at least, to the fact that comparatively fewer southern states regulate the operations of their buses and trucks than in other parts of the country.

Considerations in Issuance of Certificates

In general, state laws require the commissions, in determining whether or not a certificate or permit to operate highway carriers should be issued, to give reasonable consideration to the transportation service being furnished or that would be furnished by any railroad or other existing transportation agency. Due consideration is also to be given to the likelihood of a proposed service being permanent and continuous throughout 12 months of the year and the effect which such proposed transportation service might have upon other forms of transportation service which are essential and indispensable to the communities to be affected by such a proposed service or that might be affected thereby. Such requirements are pointed to without comment by several of the replies to the *Railway Age's* questionnaire.

On the other hand, a number of the state officers have described the effect of such requirements upon their decisions on applications. For example, the letter from the Public Service Commission of New Hampshire states in this connection, "The principal points considered by the commission in passing upon applications for authority to operate buses in common carrier service is whether or not the granting of a given application will be for the

'public good.' In defining this term the commission has gone on record to the effect that reasonable protection must be afforded to the existing transportation facilities. A number of decisions rendered by the commission hold that competition in this field is not desirable. Several decisions of the commission have granted authority to railroads to co-ordinate motor vehicle service, where to do so would supplement existing railroad service or substitute a service which could be rendered more cheaply."

The Board of Railroad Commissioners of the state of North Dakota makes this stipulation: "This department, before approving the schedules, particularly those of motor bus lines which parallel to any extent steam carrier lines, requires buses to operate in the opposite direction to that of the local passenger trains, giving an added service rather than a competitive service."

In Colorado the Public Utilities Commission, according to its statement, "in issuing certificates permitting buses and trucks to operate over the highways, requires the applicant to establish the fact that public convenience and necessity demand the proposed service, and that the applicant has had sufficient experience in the operation of buses and trucks and financial ability to give good and efficient service. The commission draws the line as to whether or not the public interest will be advanced by the giving of the proposed service."

This position is taken by the Department of Public Works of the state of Washington: "In considering an application for a certificate of public convenience and necessity, this department takes the position that it has a right to take into consideration all methods of transportation then enjoyed by the territory in which the operation is proposed. In general, an attempt is made to determine the final effect of the operation on competing lines with a view to ascertaining the ultimate benefit or detriment to the public. In many cases a proposed operation will result in a temporary increasing service, but with a resulting decrease of patronage to competing carriers, might ultimately force a curtailment and abandonment of a service which would more than outweigh the original advantage gained."

The state of Wyoming, on the other hand, "has never granted certificates to compete with railroads in Wyoming as yet."

In Minnesota the Railroad and Warehouse Commission gives consideration to the existing service and the public need, on a long view basis, for the highway service. The attitude of this commission is rather favorable to proposals for the operation of motor buses and trucks when the considerations of existing service and public need are not strongly and obviously in opposition to the highway service. In other words, the Minnesota commission generally gives the benefit of any doubt to the applying highway carrier.

Attitude Toward Reduction of Train Service

The position of the Public Service Commission of New York toward train withdrawals, as described in its statement, is typical of that of most of the others. It is that "petitions of steam carriers to withdraw passenger trains from service are given public hearing at which proof of unprofitable operation is applied. The determination of each petition is upon the evidence submitted in the case. Some petitions are granted; some are denied. Each is dependent upon the evidence submitted and no general rule can be stated."

This is amplified to some extent by the letter from the Public Utilities Commission of Rhode Island which says, "In many instances we have given our sanction to the withdrawal of trains when they have become unprofitable. In other cases we have withheld our sanction until some other method of transportation has been pro-

vided." This point of other existing service is also emphasized by the statement from the Railroad Commission of Texas which says, "As to our attitude toward the application of railroads for permission to withdraw trains, we have been influenced in authorizing the abandonment of service by the competition of motor transport." The Board of Railroad Commissioners of South Dakota says that in several instances the withdrawal of certain trains has been permitted, but, on the other hand, "the board has issued several orders requiring additional railroad service through the restoration of certain trains previously discontinued."

The attitude of the Board of Railroad Commissioners of Iowa toward the withdrawal of trains is given in the following statement: "Generally speaking, the board has not objected to the withdrawal of trains where it has been clearly shown that the patronage of such trains does not pay the cost of operating them. There might be cases, however, where a train would have to be retained in order that the public receive any service, provided, of course, that the general business of the railroad exclusive of such train was on a paying basis. Our courts have uniformly held that the public may not be deprived of all service because a particular train is not paying, provided the railroad as a whole is being operated at some profit."

The Department of Public Works of the state of Washington says on this matter, "In general, the department would not look with favor, and would undoubtedly resist, an attempt on the part of a railway to discontinue entirely its service where the community served would be left without reasonably adequate means of transportation. In such cases, however, the department might consider it proper to allow a reduction in the amount of service."

Highway Rates Compared with Rail Rates

Replies to questions as to the comparative levels of bus and truck fares and railway fares indicate that there is no uniformity whatever. The question of competition with other carriers and the familiar factor of "what the traffic will bear," appear to be the most important considerations.

On this subject the New York commission says, "Fares charged on bus lines are about equal to the 3.6 cents mileage rate charged by the steam carriers. In some instances, however, bus lines charge about three cents a mile and in a few instances in excess of the mileage rate charged by the steam carriers."

Commissioners of other states report as follows:

New Hampshire—"It may be said that as a general rule the rates of motor vehicles operated in common carrier service are higher than rates for similar service rendered by railroads."

North Carolina—"The rates charged by bus lines follow rather closely the rates charged by railway lines."

The secretary of the Public Utilities Commission of Rhode Island says in this connection, "Generally I think higher on the buses than on the railroads. Certainly higher than the commutation rates."

The supervisor of transportation of the State Railroad Commission of West Virginia says, "Bus fares are 50 per cent to 300 per cent higher than railroad fares."

So much for the east. In the south the chairman of the Railroad Commission of Texas states, "We have as yet established no rates, and returns to questionnaires which we recently sent out indicate that there is no uniformity in charges voluntarily assessed by operators at this time."

In the middle west comparisons of the highway carrier and railway rates are much the same as in the east and south. In South Dakota, "as a general rule bus rates

are a trifle higher than corresponding railroad rates, while rates for truck transportation are intended to be on about the same basis as railroad freight rates," according to the statement from the Board of Railroad Commissioners.

The following quotations give a picture of the situation in other middle western states:

North Dakota—"Passenger rates charged by motor carriers are usually higher than those charged by the steam roads. Rates of freight carriers are approximately the same or higher than those charged by the steam carriers. However, the drayage charge at each end influences considerably the truck service."

Iowa—"Motor carrier rates are not at all on a uniform basis. In some cases they largely exceed railroad fares for equal distances. In many cases, however, the passenger rates are practically the same as railroad rates per mile. Freight rates generally are higher."

Nebraska—"In general, rates are lower than railroad rates between termini and approximately the same as railroad rates intermediate."

In Minnesota the rates for highway transportation are approximately the same as corresponding railway rates, being lower in most instances if there is a difference of any kind.

Conditions in the western states are indicated by the following excerpts from letters of the various commissions. Colorado—"Rates follow very closely the railroad passenger and freight rates." New Mexico—"Rates seem to be favorable as compared to railroad rates." Oregon—"Practically same as railroad." Utah—"The rates for bus and truck service are, generally speaking, higher than the railroad rates."

Washington—"The department has made no extended comparison of stage and truck rates as compared with the rates of railroads. However, in order that we may give this question some reply we have chosen a few representative points in the state and upon comparing the railroad and motor vehicle rates between these points believe it would be fair to state that both stage and truck rates are slightly higher than the corresponding rail rates. You understand that the truck rates in many instances include a store door delivery and receipt."

Are Present Bus and Truck Operations Profitable?

The replies to our question as to whether or not bus and truck operations in general have been profitable indicate that there is little definite knowledge on this subject. Very few of the states require reports showing revenues and expenses and generally in those states which now do require such information, the laws have been in effect so short a time that reports have not yet been filed. Some general information on the question of bus and truck profits, or lack of profits, has been given us however. The statement of the Corporation Commission of the state of North Carolina is that, "as result of survey made by this office, it was estimated that the operating cost of bus lines was approximately 18 cents per mile and that the average gross receipts were 24 cents per mile."

On the question of bus and truck profits, the chairman of the Board of Railroad Commissioners of Iowa says, "We have not as yet developed the system of accounting which we are going to impose upon motor carriers and up to date have no authentic information as to the cost of operation or net profits. My private opinion is that when we have arranged for reliable reports on these matters up to this time few motor carriers will show any net profits."

The chairman of the Railway Commission of Nebraska says, "Most of the buses make no money as evidenced by the large number of failures."

Very little information has been obtainable as to the

mileage limits within which buses and trucks may operate on scheduled routes with expectation of profit. In reply to the questionnaire the commissioners of the various states were almost unanimous in agreeing that there is no information of a dependable nature upon this subject. Four of them, however, expressed opinions based on observations in their states. They are quoted below.

Mileage Limits of Economic Highway Operation

North Dakota—"The truck lines are usually 30 miles in length, some few, however, extending as far as 60 miles, in those instances usually cutting across country where the railroad mileage is much greater than that of the highway. The buses apparently are operating successfully over longer distances."

Iowa—"We have no statistics that would enable us to determine the limits within which buses and trucks may be operated at a profit. It is our thought, however, that short hauls only can be made profitable."

Utah—"Buses and trucks may be operated profitably for short distance hauls in competition with railroads and within areas not provided with other means of transportation tributary to rails."

Washington—"We have compiled no figures which would aid you in giving an estimate of distances which motor vehicles can expect to render a profitable service. However, we are inclined to agree with published estimates on this subject which conclude that freight service especially is limited in its economic possibilities to approximately 50 miles, varying, of course, with road conditions, amount of traffic, etc. Buses seem to be able to operate profitably for somewhat greater distances on the average."

Attitude on Regulation and Taxation

In general, the commissioners who have written approve the attitude of the National Association of Railway and Utilities Commissioners which has gone on record as favoring interstate regulation of motor buses and trucks as well as intrastate regulation. Some hesitancy was shown in favoring the adoption of a compulsory system of accounting such as the railways use, the general belief being that it would present a problem to the average independent bus and truck operator which he would be unable to handle successfully. The general attitude toward the proposal of the A.E.R.A. that buses and trucks be taxed at a rate of one cent per ton mile on the business that they do is generally viewed by the commissioners discussing it as being a step which would materially obstruct the continuation in operation of common carriers on the highways.

Statements from the various commissioners on these questions are quoted below.

New York—"It is believed a system of accounting for bus operators similar to that required of steam carriers is not practicable. Two forms for reports by bus certificate holders are now being prepared, one for larger corporations and another for individuals operating smaller lines and routes. The commission has never formulated or expressed a preference for any proposed method of taxation."

New Hampshire—"Naturally the commission believes that effective regulation of rates, service and accounting and an equitable system of taxation of motor vehicles operated in common carrier service will stabilize and strengthen all forms of transportation service rendered to the public, and is in favor of such regulation and taxation, both of interstate and intrastate service."

North Carolina—"We have made no comparison as to the application of the several classes of taxation. Our tax of 6 per cent of gross receipts since the law went into effect has not changed the rates which were charged

prior to the enactment of the law. The majority of our operators have built up their business from a one-man and one-car business and with few exceptions those in charge are not qualified to keep standard accounts and the receipts from operation are not sufficient to permit them to employ auditors."

Rhode Island—"Leaving out the taxation part, I think that our commission is probably unanimous as being in favor of some regulation, particularly on the interstate traffic of buses."

Texas—"It is our information that the larger operators who are engaged in the business under proper organization in this state would welcome regulation. Undoubtedly a uniform system of accounting would be desirable."

South Dakota—"The tax or compensation imposed upon motor carriers of freight amounts on the average to from 0.6 cents to 1 cent per ton mile. This tax has only been in effect since July 1, 1925, and we are therefore unable to state what effect the same may have upon the future of bus and truck operations or upon rates."

Iowa—"Our law provides for motor carriers practically the same system of regulation and accounting requirements as applied to railroads. Under present conditions I am inclined to think a tax of one cent a ton mile would be prohibitive to bus and truck operations in Iowa. Bus and truck rates would have to be advanced considerably to meet such a heavy tax and I doubt, with the situation as we have it, that Iowa could sustain operation of buses and trucks with such a tax rate."

Nebraska—"There should be careful accounting. Taxation should be of such special nature as to partially compensate for use of highways. Taxation which would have the effect of curtailing the traffic is less to be desired than the use of certificates of convenience and necessity."

Minnesota—"A tax rate of one cent per ton mile would eliminate a large part of the bus and truck operations in this state."

Colorado—"I believe that a one cent per ton mile tax would have the effect of eliminating probably 75 per cent of our passenger bus and freight truck operation."

Montana—"At the present time the motor transportation industry in Montana is not such, in our opinion, as to require regulation and accounting in the same manner as steam railroads. Any system of taxation would, of course, be passed on to the consumer and the transportation rates would be increased by increased taxation. We have not had an opportunity to analyze the effect of a rate of one cent per ton mile, but this seems to us to be a very high rate of taxation."

Utah—"I am of the opinion that a system of regulation somewhat similar to that required of the railroads and a system of taxation such as has been put in effect will in the course of time eliminate bus and truck operations over the public highways where the service is not especially required and will as a matter of course tend to an increase of rates for automobile service. In some instances such a system of regulation and accounting would in my opinion, work a hardship upon outlying communities that are dependent upon truck and bus service as their only means of transportation. We have in this state sparsely settled communities entirely dependent upon the bus and truck as a means of transportation. The operators serving them oftentimes are incapable of preparing and rendering accounts and making reports such as are required of the railroads. Further, the imposing of a tax upon them, owing to the limited traffic arising in these sparsely settled areas, would require them to increase their rates to such an extent that they would become severely burdensome to the public or else they would operate at a financial loss."

Washington—"At the present time this department has in effect regulations and accounting requirements which, although not nearly so comprehensive, nevertheless cover to quite a considerable extent the same purpose as the present regulatory and accounting requirements made of the railroads by the Interstate Commerce Commission. As to whether or not a tax of one cent a ton mile would be burdensome would depend largely upon the basis thereof. We are inclined to believe that it would not be feasible insofar as this pertains to truck operation as it might be found very expensive to collect. We are of the opinion that a scientific study should be made with reference to the use of highways and the effect upon such highways of the various kinds of vehicles so that a reasonably equitable tax might be placed upon all users thereof. A ton mile tax placed upon certificate holders in this state would only include about 350 motor trucks while the director of licenses' office shows some 47,000 truck licenses issued in this state."

"We believe that our regulatory law in this state has worked out successfully with reference to the bus operators. We believe we have better service and better equipment than any other state. This improvement has not been so marked with reference to freight operations as there is not the demand for regular scheduled service as in the passenger operations. We are of the opinion that the state regulatory body should be empowered to regulate both state and interstate bus and truck operations. The problem is a local one and should not in our opinion be placed under the Interstate Commerce Commission. We see no reason why the regulatory bodies of adjoining states should not be empowered to regulate interstate traffic between such states with possibly provision for appeal to the Interstate Commerce Commission."

Copper Range Adds to Service by Operating Buses

THE Copper Range, which serves the upper peninsula of Michigan, during the past five months has effected a great increase in the frequency of the passenger service offered its patrons by the operation of a number of motor buses. The motor bus operations are carried on through a subsidiary, the Copper Range Motor Bus Company, Inc., which was organized in November, 1925. This subsidiary purchased the independent Range Bus Line Company which had been competing with the railway for passenger business in the upper peninsula since 1917.

The bus service of the Copper Range parallels the main line between Painesdale, Mich., and Lake Linden, a distance of 22 miles, serving also the towns of Trimountain, South Range, Atlantic, Houghton, Hancock, Dollar Bay, Mason and Hubbell. An hourly service is maintained each way between Painesdale and Lake Linden from 6:30 a. m. to 11:30 p. m.

The highway equipment used consists of eight White buses with a seating capacity of 18 to 25 passengers each. Four buses are used in regular service, the other four being held in reserve and used occasionally for special parties.

The bus operation of the subsidiary company is supervised by officers of the railway, who hold similar ranks in the bus company. The bus service is entirely supplementary to the train service which has been reduced to a minimum in the Painesdale-Lake Linden district since 1920. At the present time only one passenger train is operated in each direction over this part of the line daily.



One of the New England's 26 Whites

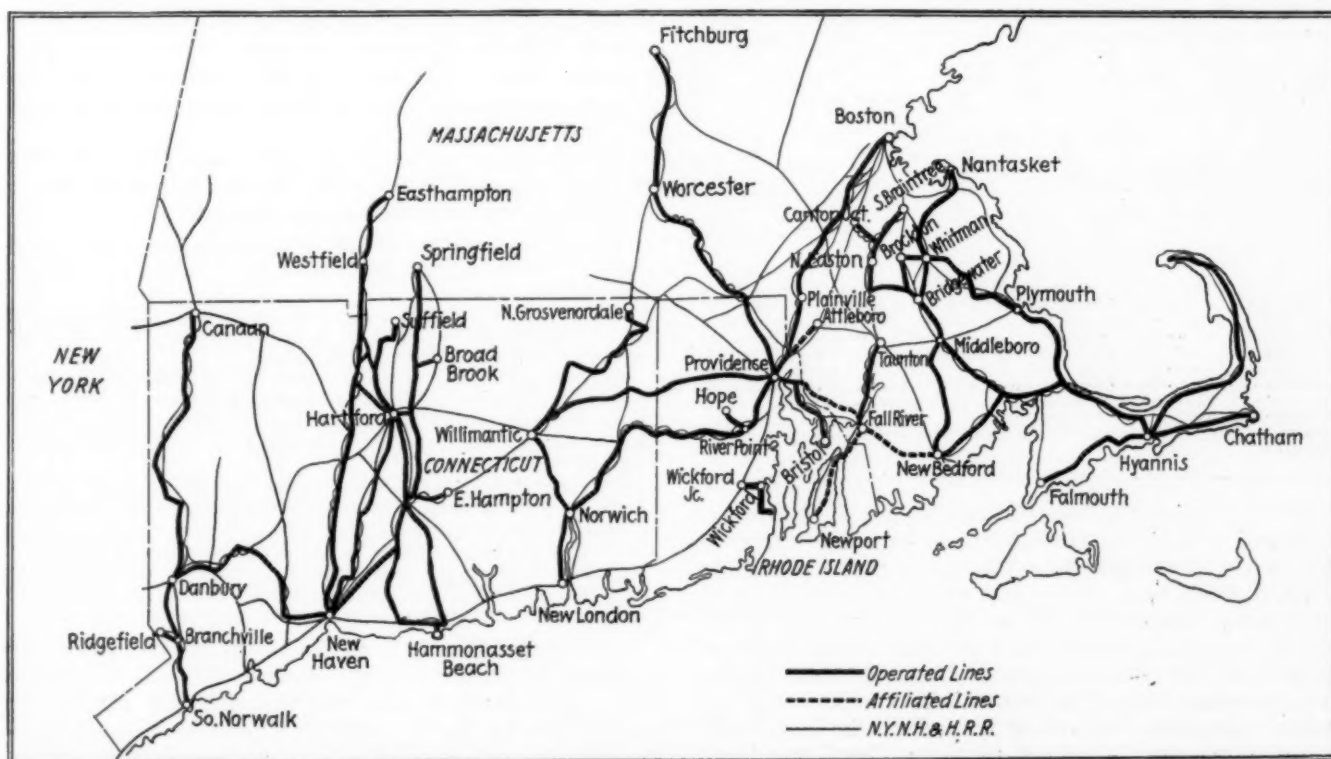
N. E. T.'s Operations Growing Rapidly

New Haven's bus subsidiary, with railroad men in charge, will soon have 166 buses on 1122 miles of route

THE New England Transportation Company, bus subsidiary of the New York, New Haven & Hartford, operates 153 buses on 1,042 miles of route. Buses now under order and new routes contemplated will bring these figures to 166 and 1,122 respectively. Of the various lines operating, 31 are operated by the company itself and 8 more lines are in contemplation. In

addition 5 lines are operated in conjunction with other carriers.

The primary purpose of the bus lines thus far installed has been to provide a co-ordinated service with the railroad company's trains, reducing the number of station stops and permitting the discontinuance of some uneconomical train service. One or two lines, however, are



Lines of the New England Transportation Company

run in direct competition with the road's own trains where there has been little or no decrease in train service because on these routes independent operators were already seriously competing with train service; the New England Company put its own buses on in order to meet this outside competition. In the case of a few branch lines, bus

the economic considerations present and the public convenience to be served.

The policy of the New Haven with reference to its bus operations was stated officially by Vice-President D. P. Russell, who is president of the bus company, before the Massachusetts authorities at the time of the inception of the bus company. It is quoted in the bus timetables and reads as follows:

"For various causes, principally the improvement of highways and the development of motor vehicles, a considerable percentage of the passenger travel, new and old, has left the rails and gone to the highways, both by private car and by motor bus.

Extensive User of Rail Motor Cars

"However these new methods of transportation may develop, the territory in Southern New England which the New Haven serves, will always be dependent upon the railroad for the bulk of its heavy transportation. Passenger service on some of its lines can no longer be operated with steam locomotives except at a heavy loss. For this reason, the New Haven as a pioneer has been co-operating with manufacturers of gasoline rail cars and has now twenty-five such cars in service which, in ac-

Route	Mileage	Number of round trips daily†	Kind of service*
Boston-Providence	45.0	16	Competitive and supplementary
Providence-Bristol	16.5	29-4	Co-operative
Providence-Norwich	55.8	4	Co-ordinating
Providence-Worcester	42.6	14-14	Co-ordinating
Worcester-Fitchburg	25.4	17	Supplanting all trains
Providence-Willimantic	46.5	4-2	Co-ordinating
Willimantic-No. Grosvornordale	36.5	1-2	Co-ordinating
Norwich-New London	14.6	6	Co-ordinating
Norwich-Willimantic	22.0	3	Co-ordinating
No. Braintree-North Easton	14.0	4-12	Partial relief of trains
Whitman-Bridgewater	6.8	8-1	Supplanting all trains
No. Easton-Brockton	15.7	1	Supplanting all trains
Brockton-New Bedford	36.6	8	Substitution for round about rail service
Taunton-Fall River	15.9	6	Elimination of local stops and some trains
No. Easton-Canton Junction	10.1	7	Elimination of local stops and some trains
River Point-Hope	2.9	5	Supplanting all trains
Wickford Junction-Wickford	3.0	8	Supplanting all trains
New Haven-Hartford	37.5	16	Competitive and supplementary
New Haven-East Hampton, Conn.	35.6	3-1	Partial substitution for trains
New Haven-Easthampton, Mass.	72.3	2-2	Partial substitution for trains
Hartford-Suffield	21.0	2-1	Supplanting all trains
Hartford-Springfield	26.4	16	Competitive and supplementary
Hartford-Westfield	31.1	6-3	New territory
Hartford-Broad Brook	14.8	1	Too many passengers for rail car
Hartford-Hammasset Beach .....	.....	1	More direct line than rail
Danbury-Canaan	59.7	3-2	Supplanting local service
New Haven-Danbury	41.1	2	New territory
Danbury-No. Norwalk	24.2	4	.....
Ridgefield-Branchville	4.4	10	Supplanting all trains
Plymouth-Hyannis	36.1	3	New territory
Middleboro-Hyannis	45.0	3	Co-ordinating and supplementary

Route	Mileage	Number of round trips daily	Kind of service
Hyannis-Chatham .....	.....	8	Co-ordinating and supplementary
Hyannis-Falmouth .....	.....	6	Co-ordinating and supplementary
Hyannis-New Bedford .....	.....	3	Co-ordinating and supplementary
Brockton-Nantasket Beach	22.3	1	Awaiting certificates which have been applied for.
Brockton-Plymouth	26.3	1	.....
Providence-Middleboro	30.9	1	.....

Route	Mileage	Number of round trips daily	Kind of service
Providence-Fall River	45	.....
Providence-New Bedford	29	.....
Providence-Newport	17	.....
Providence-Attleboro	17	.....
Providence-Plainville	18	.....
Grand total	1,121.6	.....	.....

*Designations here give only a salient characteristic of service. *Competitive* indicates that the line is operated to oppose an independent operator who is competing with the railroad. *Co-operative* indicates that the line is operated in conjunction with another company. *Co-ordinating* indicates that buses are used to eliminate local stops by trains with which buses connect at important points, thereby improving rail service. Naturally, a given service might be competitive and co-operative and co-ordinate with trains all at the same time. In this column, however, only the most salient characteristic. Other terms used under this heading are self-explanatory.

†Where two figures are given, second indicates round trips over a portion of the route.

service has permitted the elimination of all passenger trains and a considerable saving in expense. In still other cases buses have been placed on routes which do not parallel rail lines closely and which serve to open up new territory not previously served. In one case a bus was put on to supplement rail car service which was not sufficient by itself to take care of all the business on the line unassisted. In other words, the company has no hard and fast policy regarding just where the bus should be used, but rather is inclined to take a liberal stand and settle each proposed case on its merits, bearing in mind

Number	Type	Seating capacity	Make	Body builders
20	Parlor	25	Mack	Brown Bender Lang Buffalo Body Farnham-Nelson
10	Semi-De Luxe	29	Mack	
11	Parlor	25	White	
15	Semi-De Luxe	30	White	
7	Parlor	27	Int. Harvester	
45	Parlor	29-29	Yellow	Farnham-Nelson
30	Parlor	27-29	Fageol	
26	Parlor	25-27-29	Pierce	
2	City type	20	Reo	
166	Total			

cordance with the demands of the public for rail service of this character, it will substitute for certain passenger trains where travel has become so light that a less expensive method of transportation is necessary.

"There is some passenger service on the New Haven system which cannot be operated economically and satisfactorily even by gasoline rail cars. There are other situations where changed conditions require a supplementary service over the highways in addition to that performed on the rails.

"Where the operation of the motor coach thus becomes desirable or necessary, it will, so far as practicable be operated subject to the necessary authority:

(1) As an extension of and in connection with rail service, making connections with important trains that may be desirable in the public interest.

(2) Parallel with and as feeders to rail service, thus enabling the rail service to be scheduled more rapidly and in consequence to become more attractive to the public.

(3) For the filling of rail schedule intermissions where highway operation is justified but where passenger traffic is too light or freight switching too heavy to justify gas rail cars, and where through the operation of the highway service these gaps in the rail schedule can be filled, and

(4) For a highway service, connecting with the rail service so far as practicable, between certain populous centers where the rails handle passenger travel, but between which the construction of new or the improvement in old highways has now created a situation in which the operation of the motor coach offers the only means of regaining former revenues now lost, and of more directly combining the two forms of transportation.

"This undertaking of the New Haven Railroad is for the purpose of affording the communities and the public which it formerly served, and which it now serves, the best rail service that is practicable, with such added highway motor coach service as may be necessary to supply the public needs and as may be in its interest."

Half of Road's Revenues from Passenger Service

Passenger train revenue is a much more important source of revenue to the New Haven than it is to the average road. In 1920 it constituted 49 per cent of the total operating revenues. In 1925 this percentage had changed to 43, which still means that passenger service on the New Haven supplies a larger proportion of the total revenue than is the case with any other large railroad—the only exception being the Long Island. The road, however, in common with most of the roads of the country, has experienced a decided decline in this business. Revenue passenger miles in 1925 were 16 per cent lower than in 1920. The decrease in the number of passengers handled was much greater—34.4 per cent—but part of this great decline was compensated for by an increase in the average journey from 20.16 miles in 1920 to 25.74 in 1925. A larger part of the falling off was

of operation no great concern is felt. On the other hand, if traffic shows a falling off to the point) here it pays for only a small portion of the cost of the train, steps are taken at once to see what can be done in the way of a substitute service.

The company adopted for use in its preliminary studies a rather high figure, comparatively speaking, of cost per bus mile run, viz., 40 cents. It was felt that the figure used by many operators, i.e., from 20 cents to 30 cents a mile, was probably too low and it wished to be on the safe side. It is now figuring depreciation of bus equipment on the basis of a five-year life. Actual operation by the company has developed a per mile cost figure considerably below the 40 per cent figure arbitrarily adopted.

Trains and Buses Connect

The bus service is closely co-ordinated with its train service and the bus timetable shows train connections at junction points for trains going to Boston, New York and other centers of population. In general, the rate of fare charged on the bus is the same as that on the rail lines, viz., 3.6 cents a mile computed to the nearest multiple of 5.

The company is active in the endeavor to draw business to its bus lines. There is little personal solicitation but considerable advertising in building up its private party business at times when all of its equipment is not in use. This business is already considerable.

The road endeavors to restrict baggage handling and express business to railroad trains wherever possible, but on a number of routes it is necessary to handle both baggage and express on the buses and the company owns two trucks which it uses as auxiliaries in this service.

Railroad Men in Charge

The official personnel of the New England Transportation Company is made up almost entirely of railroad men. A. P. Russell, president of the company, is also a vice-president of the New Haven. E. J. Phillips, vice-president, is counsel for the railroad in Rhode Island. N. M. Rice, vice-president in charge of purchases, holds the same position for the railroad. C. H. Knights, treasurer, is assistant treasurer of the railroad. F. S. Hobbs, manager, was formerly a division superintendent on the railroad. H. Price, traffic manager, was formerly assistant general passenger agent on the railroad. R. H. Palmer, auditor, is an auditor also for the railroad. Of the operating heads of the three bus divisions, two are former railroad men and the other came from the automotive transportation field. The officer in charge of maintenance work, naturally, is an experienced automotive man.

Divisional headquarters are located at Hartford, Providence and Brockton. The superintendent at Hartford has jurisdiction over the Connecticut lines; the one at Providence of the lines in Rhode Island and those extending to Fitchburg and Boston in Massachusetts. The Massachusetts lines are in charge of an assistant superintendent and include all lines in Massachusetts except those from Providence to Worcester, Fitchburg and Boston. In addition to these superintendents, there are a number of local supervisors, whose titles are not definitely settled, but who resemble in function the trainmaster on the railroad. Generally speaking, every bus operator employed will come into contact with one of the supervisors practically once daily.

A central garage for housing and repairing the buses is maintained at Providence. The facilities now used consist of a garage with a capacity of 37 buses which is leased by the railroad and manned by its own mechanics. The company will in the near future erect its own garage and heavy duty repair shop in Providence which will have

Form A-16-NET

**NEW ENGLAND TRANSPORTATION COMPANY
COACH OPERATOR'S REPORT**

Coach No. _____ Operator _____ Date _____ 192__

SPEEDOMETER		ODOMETER		TIME WORKED		Line	
FROM	TO	FROM	TO	FROM	TO	FROM	TO
CASSED						DUPLX CROSSED	
STARTED						DUPLX STARTED	
TOTAL						TOTAL CROSSED	

SPECIFY TERMINALS AND TIME				CASH PAID		TICKETS		PASSED	REMARKS
Trm No.	Starting Point	Time	Arrived At	No.	Amount	No.	Amount		
1									
2									
3									
4									

Upper Portion of Coach Operator's Report

Instructions on the back of this report read as follows: "Operators will fill out this report at the end of each trip, placing tickets and auditor's portion of duplex in envelope Form A-8. At end of day's total report, enclose with all envelopes (Form A-8) in envelope Form A-5 to Auditor, Boston, Mass. Total cash collected should be remitted to treasurer or deposited with Ticket Agent each day. Care should be taken to show correct readings of meters on car when starting and closing day. Leave 'Amount' column under tickets blank, but show number of tickets collected."

in commutation traffic which declined 27.5 per cent from 1921 to 1925. This decline in commutation traffic, which is handled at low rates, served to bring the average earnings per passenger-mile up slightly to 2.753 cents per mile in 1925. Again, the considerable change in the relationship of passenger train revenues to freight revenues was due to some extent to an increase of 12 per cent in the receipts per ton-mile from 1920 to 1925.

The decline in the volume of passenger traffic on the New Haven, however, was not as serious as that for all the Class I railroads in the United States. In 1925 the revenue passenger miles for the roads as a whole was 23.2 per cent below 1920. On Class I roads in the eastern district alone the decline was 15.2 per cent and on the New Haven as stated above, it was only 16 per cent. Its position, relatively, therefore was above the same as that of other roads in the eastern district and considerably better than that of the roads of the country taken together. The situation which, possibly, made the decline more serious to the New Haven than these figures might indicate is the fact of the high proportion which passenger earnings bear to its total revenues.

On lines where bus service has been inaugurated in co-ordination with trains to reduce local stops by trains the rail service has been speeded up on an average of about 20 per cent. The railroad checks up on the business done by all its trains at least three times a year in order to have accurate and up to date records of earnings. Where these earnings fall only slightly below the cost

a garage capacity for 50 buses and will be equipped to handle heavy overhaul work on all equipment in Rhode Island and Massachusetts east of Worcester. It will be so built that it can easily be extended. It is hoped to have this garage completed and in service by the late autumn of the current year.

Prefers to Have All Work Done by Employees

At points where buses are in operation outside of the Providence zone garage space is rented from public garages. In most of these places, however, all the work done on the buses is performed by mechanics in the employ of the New England Company. In only a few isolated instances are buses entrusted both for housing and repair to persons who are not employees.

The company feels strongly that wherever possible it should do its own garaging and maintenance work, in order that there be no question concerning the standard of maintenance. Where servicing is done at public

to make the bus operation joint with the New England Company and the local traction line or local service competing with the electric lines, has been avoided altogether. One line, that from Providence to Willimantic, was purchased outright by the New England Company.

Some examples of joint operation follow:

Providence to Fall River and New Bedford. Here the bus service is provided, not by the New England at all, but the business is turned over to the Union Street Railway and the Interstate Limited Motor Coach Company. Each of these companies supplies part of the equipment. The revenue accruing between Fall River and Providence goes to the Interstate Limited Company and that between Fall River and New Bedford to the Union Street Railway.

Providence and Newport. Here the business is carried on by an agreement similar to that above between the Colonial Coach Company and the Newport Electric Corporation, the New England Company turning over its business to this line by agreement.

Providence and Attleboro. Three companies join in this operation, viz. the New England Transportation Company, the Interstate Street Railway and the United Electric Railways of Providence. The New England Company furnishes the equipment. The Interstate Company furnishes the men and operates the line. The New England pays one-third of the operating ex-

penses and takes one-third of the gross revenue. The other two companies divide the remainder of the revenues and expenses on a mileage basis. Rental depreciation and interest are charged as operating expenses.

Providence and Bristol. A street railway formerly covered this section but a portion of the line was abandoned and buses substituted. The railroad experienced a decided decline in passenger traffic following the inauguration of bus service. Accordingly the New England Company established a bus line on the route, took over the street railway buses and the line is now being operated by the New England on a 50-50 basis with the street railway.

Worcester and Fitchburg. An arrangement similar to the above is in operation between the New England and the local street railway.

Fall River and Taunton. A similar 50-50 arrangement is in effect with the local electric railway.

New Bedford and Hyannis. A similar arrangement is in effect.

Accounting System Thorough-going

Contrary to the practice of a great many bus operators who keep their accounting down to a minimum, the New England Company feels that careful and rather detailed accounting is desirable in order that weak points in the operation may be easily detected and corrections promptly made.

From a standpoint of revenues and mileage statistics the coach operator's report is the starting point of the company's records. This report, which is made daily, shows the speedometer and odometer readings at the beginning and end of the day, beginning and ending serial numbers of the operator's cash fare duplex and a detailed report on each trip, showing the number and amount of cash fares and number of tickets and passes. Tickets collected on each trip and a record of tickets honored but not collected and cash fare duplexes are sealed in an envelope and sent to the auditor. On lines where few tickets are honored but not taken up the bus operator makes out an individual report on each one, giving the serial number of the ticket, points for which it is issued and points between which it was honored on his bus. On some bus runs, however, the making out of an individual

Form A-20 NEW HAVEN TICKETS USED BETWEEN WHITMAN AND			
KIND	BRIDGEWATER	E. BRIDGEWATER	ELMWOOD
One Way			
25 Trip			
Comm.			
Pupil			

(a)

Form A-21 NEW HAVEN CARD TICKETS USED BETWEEN NEW HAVEN AND				
TO	EA. HAMPTON	COBALT	PORTLAND	MIDDLETOWN
New York				
Bridgeport				

(b)

Form A-22 NET NEW ENGLAND TRANSPORTATION COMPANY	
R. H. Palmer, Auditor.	No. _____
_____ Railroad ticket No. _____	
Reading _____	to _____
Used between _____	and _____
on trip _____	Date _____ 192_____
Operator, _____	

(c)

(a) and (b) Are Punch Tally Cards for Reporting Railroad Commutation Tickets Honored but Not Taken Up—(c) Is Form for Reporting Ordinary Railroad Tickets Honored but Not Taken Up

garages, the company feels that rather careful inspection is necessary. This can be avoided if maintenance is performed by employees who are well trained in its standards and who have nothing to lose by doing their work well.

Co-operating with Trolley Companies

The company has, generally speaking, been able to work amicably with local trolley lines in its territory. Where buses have been placed in service in territory served by local electric lines, agreement has generally been reached

Form A-23 NET New England Transportation Co.	
_____ LINE	
Tickets Collected on	
Trip No. _____	
_____ 192_____	
Operator _____	
Enclose all tickets and Auditor's portion of duplex in this envelope.	
Operator Punch Here	

Operator's Ticket
Envelope

slip of this character would entail too much delay. For such runs, punch slips are provided; the operator simply being required to punch this slip in the proper category for each ticket so honored. The company keeps a regular record of bus passenger miles, which can readily be availed of in the case of individual runs by computation from the ticket envelope.

The bus driver turns in his cash to the ticket office and

secures a remittance slip for the same, which he sends with his ticket envelopes and cash fare duplexes to the auditor.

Cash fare boxes are used on some runs. The passenger pays his fare to destination on entering the bus and receives from the operator a ticket designating the destination to which fare is paid. Upon leaving the bus he surrenders this ticket to the operator. This method is used to ensure against paying for too short a distance.

NEW ENGLAND TRANSPORTATION COMPANY									
OPERATING REVENUE ACCOUNTS AND STATISTICS									
Line									
(Comparison with corresponding month and period of preceding year)									
CLASSIFICATION	Month of 19				Mos. To 19				
	Amount		Increase—Black Decrease—Red		Amount		Increase—Black Decrease—Red		
REVENUE FROM TRANSPORTATION									
101 Passenger Revenue									
103 Special Coach Revenue									
104 Mail Revenue									
109 Other Transportation Revenue									
Total Revenue from Transportation									
REVENUE OTHER THAN TRANSPORTATION									
110 Station and Coach Privileges									
116 Rent of Equipment, Buildings and Other Property									
119 Miscellaneous									
Total Revenue Other Than Transportation									
TOTAL OPERATING REVENUES									
TOTAL OPERATING EXPENSES									
NET OPERATING REVENUE									

Upper Portion of Operating Revenue and Statistics Sheet

The sheet also shows taxes and operating income.

Under statistics the following items are listed: Passenger Coach Miles; Chartered Coach Miles; Non-revenue Coach Miles; Total Coach Miles; Revenue Passengers Carried; Operating Ratio; Daily Average Revenue; Daily Average Expense; Daily Average Net Revenue; Total Revenue per Coach Mile; Total Expense per Coach Mile; Net Revenue per Coach Mile; Way and Structure per Coach Mile; Maintenance of Equipment per Coach Mile Power (Gasoline) per Coach Mile; Transportation per Coach Mile; Traffic per Coach Mile; General and Miscellaneous per Coach Mile; Gallons of Gasoline; Miles per Gallon of Gasoline; Quarts of Oil; Miles per Quart of Oil; Number of Coaches Operated—Full time; Number of Coaches Operated—Part Time.

Taxes are distributed as follows: Revenue Tax; Federal Tax; Registration and License Tax; Gasoline Tax.

NEW ENGLAND TRANSPORTATION COMPANY																			
DETAIL OF OPERATING EXPENSE ACCOUNTS																			
Line																			
(Comparison with corresponding month and period of preceding year)																			
CLASSIFICATION	Month of				19				Mos. To				19						
	Amount				Increase—Black Decrease—Red				Amount				Increase—Black Decrease—Red						
MAINTENANCE OF WAY AND STRUCTURES																			
1	Superintendence																		
12	Removal of Snow and Ice																		
24	Buildings, Fixtures and Grounds																		
25	Depreciation of Structures																		
Total Maintenance of Way and Structures																			
MAINTENANCE OF EQUIPMENT																			
29	Superintendence																		
30	Passenger Motor Coaches (A) Painting and Varnishing																		
	(B) Bodies																		
	(C) Chassis																		
	(D-1) Tires																		
	(D-2) Tubes																		
	(E) Engines																		
	(F) Storage Batteries																		
31	Freight, Express and Mail Trucks																		
32	Service Trucks																		
36	Shop Equipment																		
37	Shop Expenses																		

Upper Portion of Operating Expense Account Sheet

Other items in the classification of expenses are as follows: Under Maintenance of Equipment, (38) Service Vehicles; (39) Miscellaneous Equipment Expenses; (40) Depreciation of Equipment (A, Coaches, and B, Miscellaneous); (41) Equipment Retired (A, Coaches, and B, Miscellaneous). Under Transportation, (62) Superintendence; (63) Motor Coach Operators; (64) Freight, Express and Mail Operators; (65) Miscellaneous Coach Service Employees; (66) Power—Gasoline; (67) Miscellaneous Coach Service Expense (A-1, Engine Oil, A-2, Lubrication, B Miscellaneous); (68) Station Employees; (69) Station Expenses; (70) Garage Employees; (71) Garage Expenses; (77) Loss and Damage; (78) Other Transportation Expenses.

Under Traffic, (79) Superintendence and Solicitation; (80) Advertising.

Under General and Miscellaneous, (83) Salaries and Expenses of General Officers; (84) Salaries and Expenses of General Office Clerks; (85) General Office Supplies and Expenses; (86) Law Expenses; (89) Miscellaneous General Expenses; (92) Injuries and Damages; (93) Insurance; (94) Stationery and Printing; (95) Store Expenses; (96) Miscellaneous Service Equipment Expenses; (97) Rent of Equipment.

General News Department

Edward J. Pearson, president of the New York, New Haven & Hartford, has received from Trinity College, Hartford, Conn., the honorary degree of Master of Arts.

Steel ties, according to statistics issued by the American Iron and Steel Institute, were manufactured in America in 1925 to a total of 13,826 gross tons. This quantity compares with 14,968 tons in 1924 and 20,167 tons in 1923.

The Norfolk & Western has been granted by the Interstate Commerce Commission an extension of time to January 1927 in which to complete the installation of automatic train control as required by the commission's order of January 14, 1924.

Honorary degrees conferred by Syracuse University at the commencement exercises on June 14, included one to Patrick E. Crowley, president of the New York Central, Doctor of Business Administration; and one to Sir Henry W. Thornton, president of the Canadian National, Doctor of Laws. Sir Henry delivered the principal address to the graduates.

Miss Agnes Mollan, inspector of the dining car department of the Chicago & Alton, is a candidate for representative of the railroad interest to go on the trip to France which is to be made this summer to promote the movement to raise money to buy "Monticello," the home of Thomas Jefferson, to make of it a permanent memorial; and James Williams, treasurer of the Chicago & Alton, Chicago, will receive votes, at ten cents a vote, in favor of Miss Mollan. If the money brought in with these votes shall amount to \$5,000, Miss Mollan can go to Europe. The contest closes on July 3.

Brigadier General William Wallace Atterbury, president of the Pennsylvania Railroad, was the recipient at New Haven on June 23, from Yale University, of the honorary degree of Doctor of Laws. Professor William Lyon Phelps, in presenting General Atterbury's name, observed that he had received decorations and orders from France, Great Britain, Belgium and Serbia, as well as the distinguished service medal from his own country. President Angell characterized him as . . . one who is recognized at home and abroad as a courageous leader in a field of service upon which the very existence of modern civilization largely depends.

Five persons were burned to death and seven others were injured when a tourist car in Union Pacific train 26 caught fire near Crystal, Nev., early in the morning of June 16. The train was stopped and the crew endeavored to extinguish the fire with fire extinguishers while all passengers were removed from the car. When it was found that the fire was beyond control, the train moved on into Crystal where the car was set out. While the train crew was setting out the car it is believed that passengers who perished returned to the car to obtain personal belongings and were unable to get out again. The fire was due to defective wiring under the roof in the head end of the car.

Superintendents' Association Elects Officers

At the closing session of the convention of the American Association of Railroad Superintendents at Montreal on Friday, June 18, the following officers were elected for the ensuing year: President, E. H. Harman, assistant to general manager, T. R. R. Ass'n of St. L., St. Louis, Mo. (re-elected); first vice-president, E. P. Laird, superintendent, A. C. L., Richmond, Va.; second vice-president, C. L. Harris, assistant chief of transportation, C. N.; third vice-president, G. J. Shreeve, general superintendent, Belt R. R. of Chicago, Chicago (re-elected); secretary-treasurer, J. Rothschild, St. Louis, Mo. (re-elected). In addition the following members of the executive committee were also re-elected: chairman, Charles Burlingame, superintendent, T. R. R. Ass'n of St. L., St. Louis, Mo.; B. B. Tolson, assistant to general manager,

M. & O., Murphysboro, Ill.; T. J. Jones, general superintendent, Wabash, St. Louis, Mo.; W. S. Williams, general superintendent, I. C., Waterloo, Iowa; J. K. Brown, assistant superintendent, N. Y. C., Buffalo, N. Y.; W. F. Eckert, superintendent, Reading, Philadelphia, Pa., and Victor Parvin, superintendent, Ann Arbor, Owosso, Mich. San Francisco was selected as the place for the next meeting.

Fifth Member of Board of Mediation Appointed

President Coolidge on June 22 sent to the Senate the nomination of Carl Williams of Oklahoma as the fifth member of the Board of Mediation provided for in the railway labor act, for a term of three years. The President had previously appointed four members of the board, although the nominations have not yet been acted upon by the Senate. Mr. Williams has been editor of the Oklahoma Farmer-Stockman.

Freight Claim Division Officers

The following officers of the Freight Claim division, A. R. A., were elected at the annual conference of the division at Norfolk, Va., on June 16: Chairman, H. R. Grochau, assistant freight claim agent, Chicago, St. Paul, Minneapolis & Omaha, St. Paul, Minn.; first vice-chairman, T. C. Smith, freight claim agent, Central Railroad of New Jersey, New York; second vice-chairman, H. T. Liveley, general claim agent, Louisville & Nashville, Louisville, Ky. The next annual meeting of the division will be held at Quebec, Que., in June, 1927.

Change in C. N. R. Financing Methods Proposed

An act to change the requirements for the issuance of securities by the Canadian National has been introduced in the House of Commons at Ottawa by Charles A. Dunning, Minister of Railways and Canals. The bill is in the form of an amendment to the act respecting issuance of securities in the various component parts of the Canadian National. The act which is being amended applies to the Canadian Northern and does not apply to the old Grand Trunk nor to the Grand Trunk Pacific. The purpose of the present amendment is to add two sections enabling an adjustment to be made in the indebtedness of the three systems. The wording of that act is being broadened to enable compromises or adjustments to be made of existing indebtedness and also to enable one of the companies, such as the Canadian National, to issue its notes or obligations instead of the obligations of the subsidiary company which is being substituted, and without increasing the obligation.

Sir Henry Thornton Defends

C. N. R. Capitalization Study

Strong exception was taken by Sir Henry Thornton, President of the Canadian National Railways, last week to criticism spoken in the House Committee on National Railways and Shipping at Ottawa by Thomas L. Church, a Toronto Conservative member, who denounced the employment of an outsider, George Gaston, of New York, to investigate the financial position of the National system with a view to writing down its capitalization.

"I can only say," said Sir Henry, "that an examination of our financial structure was one that required greater knowledge than that possessed by an ordinary law clerk. This company has, if I remember rightly, about 150 mortgages on its properties. These mortgages vary in character and vary in seniority. Sometimes a mortgage will be a first lien on the property for a certain mileage, and then becomes a second or third lien. In some cases the junior securities have been guaranteed by the provinces; in some cases by the government, which involved the necessity of the government or the railway itself protecting a senior security, in order to protect

its interest in a junior security. The examining and cataloguing of these mortgages was extremely arduous and difficult work, and one which could only be carried on by some one familiar with that particular kind of business. I assume entire personal responsibility for the employment of Mr. Gaston, because whatever report is made, or whatever recommendation is made, with respect to revising the financial structure of this company, is something for which I must assume full responsibility, and I feel that I was quite justified in employing a man in whom I had confidence."

Exhibition of "Firefoam"

W. F. Steffens, C. C. Michie, E. J. Reilly, J. L. Rice and about 50 other members of the Railway Fire Protection Association were guests on Monday, June 14, of the Foamite-Childs Corporation at Utica, N. Y., to witness demonstrations of the various processes and apparatus of this concern for extinguishing fires with "firefoam."

The demonstration filled the day and evening. In the forenoon specialists gave brief lectures on fire protection, with special reference to railroad work and conditions and in the afternoon, at the company's experiment station, fires of various kinds were extinguished in quick time. One of the most striking exhibits was a 25 ft. tank containing 1,000 gallons of oil which was set afire and allowed to burn for two minutes, when the flames were quickly smothered with firefoam. A foam extinguisher, of five quarts capacity, was used on a small fire such as might happen in the kitchen of a dining car; and another was used to demonstrate the usefulness of this means for putting out a fire in a box car.

In the evening the guests were entertained by the Foamite-Childs Corporation at dinner, followed by motion pictures and other entertainments.

Report on Derailment at Blake, Kansas

The Interstate Commerce Commission has issued the report of W. P. Borland, director of the bureau of safety (embracing also an investigation made by James E. Howard) on the derailment of eastbound passenger train No. 116, on the Missouri Pacific, at Blake, Kan., on January 14, last, when the engineman and fireman were killed and three passengers and two employees were injured. This train, moving at about 55 miles an hour, was derailed at a facing point switch and the locomotive was overturned. The switch rails were loose because of the failure of the crank in the switch-stand allowing the connecting rod to loosen. The report contains photographic engravings showing the fracture of the casting and also a photograph showing a loose fit of the connecting rod over the lug of the lever arm. This switch had been installed only seven months before, and it was classed as new; but the investigator finds so much corrosion of metal that he suspects that the designation of this as new material was erroneous. The lever arm of the switch stand shaft was only 0.3 in. thick whereas the blue-print, supposed to describe the stand, showed a thickness of one-half inch.

Report on Proposed Peace River Railway

Following are the conclusions reached in the joint report of engineers of the Canadian Pacific and Canadian National on the building of a western outlet railway for the Peace River country, and tabled in the House at Ottawa last week by the Minister of Railways:

1. The route via Obed is the best western outlet to the Pacific; that is, from a national standpoint or from the standpoint of the Canadian National. It may not be the best standpoint of the Canadian Pacific, as it implies using part of the Canadian National lines;

2. The minimum outlay will be \$13,336,000;

3. To fully develop the section will require a minimum outlay of over \$80,000,000, and this does not include any betterments on existing roadways;

4. There is no hope, even with existing freight rate of about 39 cents per 100 lb., for the line to pay even operating expenses on the immediate traffic or on a traffic many times the present traffic;

5. There seems little hope of the line ever being self-supporting at rates even 50 per cent higher than the present ton-mile freight rate on grain to Fort William for similar distance;

6. It would be more economical to handle the business, regardless of the rate received, over the existing lines until the traffic was many times the present.

The report also states Vancouver is preferable to Prince Rupert as the ultimate port of Peace River produce.

Protective Section at Montreal

The Protective Section of the American Railway Association, W. W. Morrison, chairman, will hold its annual meeting at Mount Royal Hotel, Montreal, Canada, on Monday and Tuesday, June 28 and 29. J. C. Caviston, secretary, New York City, has issued a program of the business sessions, the principal items of which are as follows:

Monday forenoon: Addresses by R. H. Aishton and Sir Henry W. Thornton; report on Extra Protection of Liquor Shipments, by H. L. Denton (B. & O.).

Monday afternoon: Brigadier General Panet (C. P. R.) will describe the organization of the Canadian Pacific department of investigation. Freight claims will be discussed by W. H. Gatchell (Southern) and robberies by A. L. Green (A. R. A.).

Tuesday morning: Address by J. J. Mantell (Erie); report by R. J. Edgeworth (Chicago Junction) on identification of cigarettes and automobile tires; on robberies of baggage by John Dugan (B. & O.).

Tuesday afternoon: Report on co-operation with freight claim division, by R. S. Mitchell (M. P.).

"He Considered It"

(From the cross-examination of a representative of the Bureau of Valuation in connection with Account 51—Steam Locomotives.)

Q. How did you apply it?

A. I gave consideration to it.

Q. How did you apply the Baldwin curve?

A. Why, I considered it.

Q. Well, how did you apply it?

A. I did not apply it.

Q. What consideration did you give to it?

A. The same consideration as the other data shown in that exhibit.

Q. Well, what was that?

A. Considering it.

Q. Did it have any influence on your prices?

A. It may have.

Q. Don't you know whether it did or not?

A. Yes.

Q. Did it?

A. Probably as much or more or less than the other information in that.

Q. You know that is a very evasive answer.

A. I do not think so.

Q. You say probably as much or more or less?

A. We are talking about the whole account now and I could not say anything more.

Radio Successfully Used on Long Freight Train

The recent interesting experiment on the Pennsylvania (described in the *Railway Age* of May 8, page 1271) demonstrating the value of telephone communication between the caboose and the locomotive of a long freight train (by means of wires strung along the tops of the cars) is now supplemented by a successful test, on the New York Central, of radio apparatus, for carrying out such communications without the use of wire conductors.

Working in conjunction with the Zenith Radio Corporation, of Chicago, E. C. Keenan, general superintendent of telegraph and telephone of the New York Central, has made a series of experiments on that company's line between Elkhart, Ind., and Pinola, about 50 miles, demonstrating that the Zenith apparatus works successfully on trains of 100 cars or longer. The train which was used consisted of locomotive No. 2626 with 11 cars and a caboose. It started from Elkhart at 4 p. m. and experiments were kept up for four hours. Within this time there was a severe electrical and rain storm but there was no interference with the conversation, nor was there any trouble when the train was be-

(Continued on page 1990)

Freight Operating Statistics of Large Steam Roads—Selected Items for April, 1926,

Region, road and year	Average miles of road operated	Train-miles	Locomotive-miles		Car-miles		Ton-miles (thousands)		Average number of locomotives on line daily				
			Principal and helper	Light	Loaded (thousands)	Per cent loaded	Gross, Excluding locomotive and tender	Net, Revenue and non-revenue	Serv-ice-able	Un-serv-ice-able	Per cent unserv-ice-able	Stored	
New England Region:													
Boston & Albany.....1926	407	234,422	250,462	26,677	5,120	66.4	264,547	98,169	128	17	11.8	16	
1925	404	242,833	258,529	25,199	5,090	67.9	252,889	94,992	125	20	13.8	15	
Boston & Maine.....1926	2,250	503,247	581,508	52,654	13,059	70.2	655,366	261,395	337	85	20.2	42	
1925	2,282	497,957	562,849	53,506	12,681	72.0	619,262	254,158	334	119	26.2	28	
N. Y., New H. & Hartf.....1926	1,892	487,086	514,054	32,445	14,060	68.9	711,020	284,091	277	52	15.8	17	
1925	1,931	462,421	480,568	33,813	12,946	70.7	635,072	253,216	294	62	17.4	25	
Great Lakes Region:													
Delaware & Hudson.....1926	875	388,582	527,173	55,407	10,880	64.3	683,641	332,927	236	38	13.9	52	
1925	875	360,964	491,253	47,505	9,980	65.8	617,494	303,863	247	37	13.0	76	
Del., Lack. & Western.....1926	993	579,502	690,106	91,966	18,232	68.9	1,020,123	450,600	274	54	16.4	11	
1925	993	573,274	681,557	89,815	18,190	68.7	1,021,248	451,303	296	62	17.3	38	
Erie (inc. Chic. & Erie).....1926	2,323	937,128	1,031,491	102,739	34,600	64.9	2,086,205	919,371	570	124	17.8	105	
1925	2,325	860,327	957,577	87,360	32,407	65.4	1,906,317	835,007	644	98	13.2	203	
Lehigh Valley.....1926	1,345	612,493	673,613	76,815	18,625	63.9	1,091,331	474,799	398	91	18.7	73	
1925	1,357	581,775	638,334	74,162	17,712	64.6	1,047,118	469,200	445	74	14.3	104	
Michigan Central.....1926	1,835	597,707	615,172	19,757	20,920	62.7	1,105,448	377,464	285	47	14.2	90	
1925	1,826	560,422	578,561	19,213	19,214	63.0	1,007,044	355,048	296	67	18.4	99	
New York Central.....1926	6,482	2,087,057	2,356,983	166,285	76,392	63.6	4,505,690	1,918,213	1,163	322	21.7	265	
1925	6,478	1,872,146	2,088,484	139,198	71,011	64.0	4,099,333	1,721,711	1,242	333	21.1	383	
New York, Chic. & St. L.....1926	1,665	651,488	659,487	6,250	20,417	65.7	1,114,048	434,514	245	59	19.5	54	
1925	1,669	615,996	624,389	6,568	19,495	65.9	1,044,299	400,801	248	64	20.5	61	
Pere Marquette.....1926	2,179	446,113	455,588	7,360	11,575	63.6	648,659	258,989	186	31	14.1	19	
1925	2,198	367,620	375,447	6,223	9,517	65.4	539,523	242,626	188	27	12.4	37	
Pitts. & Lake Erie.....1926	231	123,959	126,703	1,379	4,048	62.4	296,585	162,088	59	22	26.8	17	
1925	231	116,340	118,361	925	3,901	63.5	284,562	159,686	74	19	20.4	27	
Wabash.....1926	2,497	730,215	761,536	11,715	21,933	65.2	1,219,751	468,512	301	71	19.0	47	
1925	2,497	646,693	674,341	11,178	20,176	67.2	1,088,554	421,660	327	58	15.1	58	
Central Eastern Region:													
Baltimore & Ohio.....1926	5,197	1,834,791	2,116,735	176,567	53,388	63.0	3,357,427	1,571,508	1,028	182	15.0	173	
1925	5,196	1,735,776	2,006,282	151,547	50,875	65.2	3,117,454	1,483,217	955	290	23.3	124	
Central of New Jersey.....1926	691	272,079	295,193	33,648	7,512	60.8	501,128	244,968	232	38	14.0	55	
1925	692	275,175	303,164	34,961	7,135	61.4	447,771	219,806	223	41	15.5	30	
Chicago & Eastern Ill.....1926	945	247,570	247,642	3,812	6,634	61.8	400,470	176,289	124	38	23.6	41	
1925	945	205,097	205,822	5,545	5,902	65.9	337,455	157,287	132	30	18.8	59	
Clev., Cin., Chic. & St. L.....1926	2,374	699,415	732,041	19,233	21,880	61.6	1,399,932	638,103	325	109	25.1	26	
1925	2,376	655,892	695,758	11,288	20,393	62.9	1,265,233	572,524	361	75	17.3	78	
Elgin, Joliet & Eastern.....1926	460	131,423	140,431	6,188	3,974	63.7	296,436	153,232	79	12	13.0	...	
1925	460	127,555	138,798	6,174	3,811	63.1	294,816	155,756	76	16	17.0	...	
Long Island.....1926	393	53,515	56,618	15,289	686	54.6	45,379	17,832	47	13	21.8	...	
1925	393	46,710	52,124	13,451	601	56.2	38,279	14,842	41	12	23.3	...	
Pennsylvania System.....1926	10,882	4,629,605	4,999,764	351,663	132,595	63.8	8,534,357	3,901,820	2,655	584	18.0	320	
1925	10,906	4,297,865	4,620,679	346,547	122,459	64.9	7,772,749	3,598,357	2,537	879	25.7	196	
Reading.....1926	1,131	641,742	704,145	69,003	17,210	60.9	1,170,449	589,315	366	72	16.3	69	
1925	1,132	612,127	670,981	67,077	15,840	62.0	1,058,756	531,404	400	75	15.8	91	
Poconos Region:													
Chesapeake & Ohio.....1926	2,650	1,069,258	1,132,771	38,379	33,099	56.6	2,615,434	1,407,997	547	97	15.1	73	
1925	2,601	1,058,581	1,116,837	31,837	32,400	57.3	2,567,683	1,393,504	482	102	17.5	43	
Norfolk & Western.....1926	2,231	825,685	1,011,486	35,708	27,980	60.4	2,232,100	1,199,758	585	60	9.3	166	
1925	2,230	758,476	914,339	32,065	24,155	61.2	1,851,136	978,830	565	82	12.7	155	
Southern Region:													
Atlantic Coast Line.....1926	4,924	974,867	994,797	15,532	24,121	57.1	1,430,673	530,631	416	60	12.7	21	
1925	4,890	935,057	955,689	15,523	24,014	61.0	1,294,272	455,090	368	54	12.8	18	
Central of Georgia.....1926	1,907	387,690	289,117	5,862	7,897	62.5	476,317	204,457	157	22	12.2	19	
1925	1,907	353,870	354,968	5,102	7,610	68.6	419,581	185,738	153	13	7.6	26	
I. C. (inc. Y. & M. V.).....1926	6,225	1,827,780	1,840,970	39,393	49,686	62.8	3,128,294	1,325,719	730	107	12.8	14	
1925	6,225	1,629,753	1,644,013	37,562	46,807	63.4	2,881,178	1,184,630	766	111	12.7	85	
Louisville & Nashville.....1926	5,021	1,789,184	1,874,555	65,896	33,906	57.8	2,350,320	1,105,796	600	113	15.9	16	
1925	5,027	1,656,044	1,749,597	64,906	31,529	61.4	2,063,988	974,444	611	108	15.0	53	
Seaboard Air Line.....1926	3,905	637,374	651,652	21,459	15,491	59.9	922,001	360,044	316	34	9.7	1	
1925	3,755	618,748	629,975	11,505	14,807	62.4	843,934	324,725	228	41	15.3	...	
Southern System.....1926	8,043	2,232,376	2,279,741	42,666	51,676	61.6	3,011,057	1,203,110	1,037	148	12.5	22	
1925	8,157	2,067,586	2,109,770	46,228	48,748	63.4	2,745,593	1,085,039	1,086	142	11.6	84	
Northwestern Region:													
Chic. & North Western.....1926	8,457	1,402,478	1,435,231	23,808	34,184	64.4	1,917,221	748,145	751	171	18.5	122	
1925	8,469	1,293,844	1,321,220	24,060	31,471	64.4	1,719,211	696,639	771	207	21.2	163	
Chic., Milw. & St. P.....1926	11,190	1,449,651	1,555,956	96,230	42,586	65.7	2,366,891	997,449	871	220	20.2	210	
1925	11,202	1,417,430	1,488,705	66,966	40,270	65.5	2,237,870	962,837	948	169	15.1	114	
Chic., St. P., Minn'p. & Om.....1926	1,819	301,105	320,906	12,602	6,015	65.1	317,516	122,913	166	37	18.1	3	
1925	1,819	271,324	286,402	10,842	5,361	69.1	278,742	112,486	156	42	21.3	2	
Great Northern.....1926	8,222	696,435	723,676	42,877	24,185	69.5	1,324,070	602,382	575	153	21.0	145	
1925	8,253	674,571	695,925	34,955	22,593	67.3	1,276,215	595,736	592	171	22.4	126	
Minn., St. P. S. Ste. M.....1926	4,372	515,156	525,908	3,384	12,705	67.8	660,243	280,169	287	53	15.6	24	
1925	4,375	483,391	4										

Compared with April, 1925, for Roads with Annual Operating Revenues above \$25,000,000.

Region, road and year	Average number of freight cars on line daily			Per cent un-serv-ice-able	Gross ton-miles per train-hour, ex-cluding locomotive and tender	Gross tons per train, ex-cluding locomotive and tender	Net tons per train	Net tons per loaded car	Net ton-miles per car-day	Car miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles including locomotive and tender	Locomotive miles per loco-motive day
	Home	Foreign	Total										
New England Region:													
Boston & Albany.....1926	2,309	5,569	7,878	4.1	14,762	1,129	419	19.2	415	32.6	8,042	183	63.9
1925	2,885	5,765	8,650	2.8	13,211	1,041	391	18.7	366	28.9	7,835	186	65.3
Boston & Maine.....1926	12,531	14,923	27,454	7.1	14,271	1,302	519	20.0	317	22.6	3,872	143	50.1
1925	14,219	13,156	27,375	8.3	14,052	1,244	504	19.8	306	21.4	3,669	142	45.4
N. Y., New H. & Hartf.....1926	17,570	20,440	38,010	14.5	17,072	1,460	583	20.2	249	17.9	5,006	128	55.5
1925	20,827	18,651	39,478	21.7	15,740	1,373	548	19.6	214	15.5	4,372	135	48.1
Great Lakes Region:													
Delaware & Hudson.....1926	8,474	7,008	15,482	5.1	20,898	1,759	857	30.6	717	36.5	12,680	163	70.7
1925	9,196	6,329	15,525	6.6	20,251	1,711	842	30.4	652	32.6	11,573	174	63.3
Del., Lack. & Western.....1926	16,146	8,643	24,789	5.0	21,080	1,760	778	24.7	606	35.6	15,133	169	79.6
1925	16,529	8,050	24,579	3.6	21,281	1,781	787	24.8	612	35.9	15,156	158	71.8
Erie (inc. Chic. & Erie).....1926	35,253	21,106	56,359	7.4	25,310	2,226	981	26.6	544	31.5	13,193	129	54.6
1925	38,057	19,088	57,145	7.1	24,909	2,216	971	25.8	487	28.9	11,969	126	47.0
Lehigh Valley.....1926	20,624	10,616	31,240	7.2	23,365	1,782	775	25.5	507	31.1	11,763	157	51.2
1925	22,508	8,342	30,850	8.2	24,092	1,800	806	26.5	507	29.6	11,529	151	45.7
Michigan Central.....1926	17,473	19,338	36,811	4.4	27,087	1,850	631	18.0	342	30.2	6,857	119	63.8
1925	15,358	16,124	31,482	5.2	26,152	1,797	634	18.5	376	32.3	6,482	116	54.8
New York Central.....1926	68,472	72,061	140,533	4.1	26,529	2,159	919	25.1	455	28.5	9,864	125	56.6
1925	75,259	66,630	141,889	3.9	26,269	2,190	920	24.2	404	26.1	8,860	123	47.2
New York, Chic. & St. L.....1926	13,025	9,825	22,850	5.8	23,324	1,710	667	21.3	634	45.3	8,699	117	73.0
1925	12,498	10,227	22,725	5.8	22,688	1,695	651	20.6	588	43.4	8,006	116	67.5
Pere Marquette.....1926	9,847	9,741	19,588	4.6	17,109	1,454	581	22.4	441	31.0	3,962	114	71.1
1925	10,395	7,887	18,282	6.8	15,798	1,468	660	25.5	442	26.5	3,679	112	59.3
Pitts. & Lake Erie.....1926	14,991	7,729	22,720	5.8	26,415	2,393	1,308	40.6	236	9.5	23,343	80	52.6
1925	16,188	7,197	23,385	5.2	25,933	2,446	1,373	40.9	228	8.8	22,997	70	43.1
Wabash.....1926	14,147	11,243	25,390	2.5	24,769	1,670	642	21.4	614	44.1	6,254	136	69.4
1925	13,612	10,277	23,889	3.0	23,752	1,683	652	20.9	587	41.8	5,629	129	59.4
Central Eastern Region:													
Baltimore & Ohio.....1926	68,680	34,064	102,744	4.6	19,881	1,830	857	29.4	510	27.5	10,079	167	63.2
1925	71,868	31,911	103,779	9.3	19,444	1,796	854	29.2	476	25.1	9,515	163	57.8
Central of New Jersey.....1926	17,331	12,867	30,198	4.4	17,307	1,842	900	32.6	270	13.6	11,819	163	40.7
1925	18,735	10,186	28,921	3.2	15,814	1,627	799	30.8	253	13.4	10,585	175	42.7
Chicago & Eastern Ill.....1926	14,190	4,112	18,302	17.5	22,005	1,618	712	26.4	321	19.7	6,217	147	51.6
1925	15,629	3,688	19,317	17.3	21,502	1,645	767	26.6	271	15.5	5,547	142	43.1
Clev., Cin., Chic. & St. L.....1926	18,924	20,751	39,675	4.3	25,036	2,002	912	29.2	536	29.8	8,959	126	57.7
1925	19,336	18,830	38,166	5.0	24,927	1,929	873	28.1	500	28.3	8,031	121	54.1
Elgin, Joliet & Eastern.....1926	9,995	7,846	17,841	5.2	15,293	2,256	1,166	38.6	286	11.7	11,109	144	53.7
1925	10,208	7,279	17,487	7.8	16,943	2,311	1,221	40.9	297	11.5	11,292	132	53.1
Long Island.....1926	1,999	8,617	10,616	0.7	4,708	848	333	26.0	56	3.9	1,511	318	39.6
1925	2,018	5,048	7,066	0.9	4,735	820	318	24.7	70	5.0	1,258	338	41.0
Pennsylvania System.....1926	215,115	88,467	303,582	9.1	20,339	1,843	843	29.3	428	22.9	11,952	136	55.1
1925	221,057	81,859	302,916	10.6	19,869	1,809	837	29.4	396	20.8	10,998	131	48.5
Reading.....1926	25,244	16,898	42,142	3.5	19,870	1,824	918	34.2	466	22.4	17,374	169	58.8
1925	26,118	14,173	40,291	2.3	19,181	1,730	868	33.6	440	21.1	15,654	169	51.8
Pocahontas Region:													
Chesapeake & Ohio.....1926	30,728	10,472	41,200	3.3	27,472	2,446	1,317	42.5	1,139	47.3	17,709	104	60.5
1925	32,235	9,535	41,770	4.1	25,202	2,426	1,316	43.0	1,112	45.1	17,860	108	65.6
Norfolk & Western.....1926	30,673	9,771	40,444	1.3	33,882	2,703	1,453	42.9	989	38.2	17,923	148	54.1
1925	34,002	8,225	42,227	2.9	30,049	2,441	1,291	40.5	773	31.1	14,631	148	48.8
Southern Region:													
Atlantic Coast Line.....1926	22,894	21,050	43,944	3.2	17,527	1,468	544	22.0	403	32.0	3,592	125	70.7
1925	21,077	16,882	37,959	4.3	17,156	1,384	529	20.6	435	34.5	3,375	123	76.8
Central of Georgia.....1926	6,007	6,730	12,737	3.7	16,457	1,229	527	25.9	535	33.1	3,574	154	73.6
1925	4,802	5,928	10,730	4.7	15,987	1,186	525	24.4	577	34.5	3,247	153	72.3
I. C. (inc. Y. & M. V.).....1926	41,951	21,222	63,173	4.3	22,572	1,712	725	26.7	700	41.7	7,099	136	74.9
1925	50,980	20,069	71,049	5.2	22,347	1,768	727	25.3	556	34.7	6,343	126	63.9
Louisville & Nashville.....1926	44,793	18,442	63,235	7.8	15,267	1,314	618	32.6	583	30.9	7,341	166	90.7
1925	43,800	16,662	60,462	7.9	14,779	1,246	588	30.9	537	28.3	6,461	160	84.1
Seaboard Air Line.....1926	12,543	14,308	26,851	1.6	15,895	1,447	565	23.2	447	32.1	3,073	142	64.1
1925	11,496	11,855	23,351	3.4	14,866	1,364	525	21.9	464	33.9	2,883	141	79.3
Southern System.....1926	53,306	30,049	83,355	5.0	17,440	1,349	539	23.3	481	33.5	4,586	161	65.3
1925	53,685	31,062	84,747	7.2	17,255	1,328	525	22.3	427	30.3	4,434	158	58.5
Northwestern Region:													
Chic. & North Western.....1926	48,971	25,997	74,968	7.0	16,694	1,367	533	21.9	333	23.8	2,949	146	52.8
1925	50,928	23,919	74,847	9.8	16,335	1,329	538	22.1	310	21.8	2,744	143	40.5
Chic., Milw. & St. F.....1926	55,179	20,203	75,382	6.1	19,948	1,633	688	23.4	441	28.7	2,971	146	50.9
1925	54,349	19,001	73,350	9.3	18,909	1,579	679	23.9	438	27.9	2,865	142	46.4
Chic., St. P., Minn'p. & Om.....1926	3,123	7,677	10,800	11.4	13,094	1,055	408	20.4	379	28.5	2,252	154	54.8
1925	3,534	8,747	12,281	8.7	12,888	1,027	415	20.9	305	21.1	2,062	149	49.9
Great Northern.....1926	41,576	8,040	49,566	9.9	21,624	1,901	865	24.9	405	23.4	2,442	141	35.1
1925	46,317	9,791	56,108	9.3	20,844	1,892	883	26.4	354	19.9	2,406	137	32.0
Minn., St. P. S. Ste. M.....1926	18,386	5,767	24,153	5.0	14,466	1,282	544	22.1	387	25.9			

General News Department

(Continued from page 1987)

neath steel bridges. The passing of another train on the adjacent track did not interfere.

To determine the value of this arrangement on a long train or in any case where a train might break in two, a stop was made at Hudson Lake and the locomotive cut off and run ahead about four miles. Throughout this entire distance communication was kept up without difficulty, and always with good loud-speaker volume. The trainmaster, conductor, engineman and brakeman who participated in the experiments were enthusiastic in their praise.

The radio equipment used in the caboose—and the same in the locomotive—consisted of a combined receiving and transmitting set with the necessary generator, batteries and loud-speaking receiver. An antenna consisting of 32 ft. of $\frac{1}{2}$ -inch brass pipe supported on special brackets fixed 12 in. above the cab roof, was installed on the locomotive. The antenna on the caboose consisted of 32 ft. of rubber-insulated wire mounted on supports. The transmitting-receiving sets contained seven tubes, three for transmitting and four for receiving. The transmitting tubes consist of 50-watt oscillator, 50-watt modulator and $7\frac{1}{2}$ -watts for speech amplification. A wave length of 115 meters was employed.

Michigan and the Detroit,

Grand Haven & Milwaukee

Considerable discussion took place last week at a sitting of the house committee on national railways and shipping at Ottawa over the action of the Michigan Legislature in regard to the Detroit, Grand Haven & Milwaukee, also the moving of tracks in the city of Detroit.

Replying to questions regarding the Grand Haven and the Detroit situations Sir Henry Thornton said:

"Among the other subsidiary properties of what are known as the Grand Trunk Western, is the Detroit, Grand Haven & Milwaukee, which runs through Detroit, across the State of Michigan, to Grand Haven; from which point we operate ferries to Milwaukee. That affords us, as you can readily see, an advantageous route to traffic to the northwest part of the United States. And that traffic, passing over that road, does not congest in the Chicago district. It can be handled not only more expeditiously, but, likewise, cheaper. In the franchise of that company there is a clause which provides that the company shall pay a certain rate, in the form of taxes, to the state, which, as I recall the figure, amounts to about \$25,000 per annum. The State of Michigan has, for a long time, wanted the railway company, the Detroit, Grand Haven & Milwaukee, to bring itself within the taxation laws of the State of Michigan. It is the only railway which today enjoys that special privilege. Some years ago, I think, the Michigan Central had a somewhat similar provision in their charter, but after some litigation and disputes, they abandoned that advantage, feeling it was more in their interest to pay larger taxes—the usual taxes that are imposed by the State—thereby having the goodwill of the State authorities, and the shipping public, so, for some time, the State has been endeavoring to induce us to abandon that special privilege.

"There was another clause in the charter of the Detroit, Grand Haven & Milwaukee which permitted the state, at any time, to purchase the railway on certain terms. I think those terms were the capital that had been actually invested in the company. In other words, the state could have confiscated that property had they desired to do so.

"The governor made us this proposition: that the city would buy and acquire for the railway company a right-of-way one hundred feet wide from Detroit throughout the distance in which we paralleled Woodward avenue, which was about eight miles; would move our tracks over, would install the necessary signalling, and, in other words, set us up as we were. They would take care of the grade separation as well. We would pay to the State of Michigan at the rate of \$200,000 per year until the capital cost of that improvement had been met. This was without interest; also providing that we would undertake, at the expiration of the liquidation of this cost of moving and the cost of the new right-of-way, to abandon the special clause which we had in the charter of the Detroit, Grand Haven & Milwaukee, and bring that railway under the general taxation laws of the State of Michigan. The state also agreed to abandon on their part the possibility of ever acquiring the Grand Trunk or the Detroit, Grand Haven & Milwaukee.

"Now, as a matter of fact, the situation was simply this: We very much needed the additional right-of-way and the additional tracks between Detroit and Pontiac. Our officers were of the opinion, and I agreed with them, that within the next year we would probably have to abandon this special clause in our charter with respect to taxes anyway, which the Michigan Central had been obliged to abandon for traffic and reasons of strategy previously; that in abandoning that we were only abandoning something we would have to give up in any case. So we concluded, after mature consideration, that the proposal of the governor was distinctly advantageous to the Canadian National Railway. We were getting important improvements at relatively small costs and giving it something which strategically we thought we would have to give up in any case. I might say that our traffic people felt that we were losing considerable business on account of the feeling that was being stirred up in the State of Michigan on account of the Grand Trunk Western in its apparent blocking—a very much needed matter."

Hill Monument Erected by People of Superior

The money necessary for the erection of the monument to James J. Hill at Superior, Wis., on May 29, which was reported in the *Railway Age* of June 5, was secured by popular subscription, the contributions coming from the business men of Superior and Great Northern employees at the head of the lakes, without aid from higher officers of the railroad. The monument, which cost \$7,000, stands directly in front of the Superior Central High School. The bronze bust, which measures 5 ft. high by 36 in. by 30 in., and which is supported by a pedestal $7\frac{1}{2}$ ft. wide at the



Bronze Bust of James J. Hill Measures Five Feet in Height

base by $6\frac{1}{2}$ ft. deep, with a taper at the top is an exact replica of the James J. Hill monument, which was erected some years ago on the campus of the University of Washington at Seattle, Wash.

The base of the pedestal measures 1 ft. in height by $13\frac{1}{2}$ ft. in width by $12\frac{1}{2}$ ft. deep. On the pedestal are four plaques, including a passenger train representing rail transportation, a steamship representing water transportation, a reproduction of the seal of the State of Wisconsin, and a reproduction of the seal of the State of Minnesota.

The Management of a Pullman-Car Hotel

The extensive use of sleeping cars as stationary lodgings for the accommodation of the great number of Shriners who gathered in Philadelphia for their annual conclave on June 1, 2 and 3, was in reality the establishment of a number of well equipped villages. Cars were parked at a dozen or more different places in the city, both by the Pennsylvania and the Baltimore & Ohio.

One of these "villages," that at the Park shop freight-car repair yard of the Pennsylvania, is described in an article in the *Pennsyl-*

vania News of June 15. Eight tracks of this yard, devoted to the repair of freight cars, were cleared, and on them were placed five trains of sleeping cars for the use of Medinah Temple, of Chicago, about 1,750 persons, together with necessary supply cars. Among the many details involved was the construction of boardwalks suitably located between the tracks, pipe lines for hot and cold water and conduit lines to furnish illumination and telephone service. The trains were numbered from 1 to 5, inclusive, and were designated by color as "Red Special," "White Special," "Blue Special," "Orange Special" and "Green Special."

Located at a convenient distance were two express cars which were converted into hot and cold showers for the use of the men. These cars were reconstructed inside so as to provide twelve individual compartments for shower baths, with a hot-water heating plant, three large boilers, each of 144 gallons capacity. A car similar in design and equipment was assigned for the use of the ladies. This feature, much praised, was prepared by J. P. Yergy, general foreman, West Philadelphia Shops.

A combined car was fitted up for the serving of refreshments between meals, also a car used as a tailor shop, with every facility for mending and pressing, which was very much in demand.

Seven dining cars with a retinue of 112 employees provided dining room service in accordance with Pennsylvania Railroad standards. The various menus for the entire time (eighteen meals) between May 30 and June 5, included dishes to suit radical changes of appetites due to extreme hot or unseasonably cold weather.

In addition to the facilities on wheels a barber shop was established in the carpenter shop with three chairs. Opposite, in the same building, was a post office and bureau of information, with adequate telephone service. The electric lighting system included, between cars on the eight tracks 75-watt lamps attached to the marker lamp holders on the cars. An emergency system was arranged whereby the cars were divided into eight groups, which allowed ample voltage of alternating current for the lighting of each car. This provided for unlimited use of light.

Other working forces included 22 men assigned to look after watering and icing, there being one ton of ice used daily.

Within 24 hours after the departure of the last train, the yard was cleared of all temporary facilities and once again restored to its normal function as a freight car repair yard.

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A Baby Crib, Which May Be Folded Up and Locked Against the Wall When Not in Use, Is Provided at Each End of the Parlor Car of "The Sunbeam," a Southern Pacific Daylight Nonstop Train Between Houston, Texas, and Dallas

Traffic News

R. S. Kern has been appointed general agent of the general coal and ore department of the New York Central with headquarters at Cleveland, Ohio.

The Women's Traffic Club of Los Angeles held its regular meeting on June 9, with an address by O. S. McPherson, executive secretary of the Pacific Coast Regional Advisory Board.

The Chicago, Milwaukee & St. Paul has placed in service a new train between Chicago and Sioux Falls, S. D., running by way of Madison, Wis., and Marquette, Iowa. The train leaves Chicago at 6:15 p. m. and arrives at Sioux Falls at 10:45 the next morning. Returning, it leaves Sioux Falls at 4 p. m. and arrives in Chicago at 8 a. m.

The Pennsylvania has established daily sleeping car service between Chicago and Atlantic City, N. J., as part of the Pennsylvania Limited. The train leaves Chicago at 5:30 p. m. and arrives at Atlantic City at 4:49 p. m. the following afternoon. Returning the train leaves Atlantic City at 7:50 p. m., daily except Sunday, and arrives in Chicago at 8:10 p. m. the following day.

The Chicago & Eastern Illinois will run a market demonstration train for the entertainment and instruction of farmers in Southern Illinois on July 12-16, beginning at St. Peter, stopping at 15 intermediate towns and ending at Karnak. Special attention will be given to peaches, tomatoes and other fruits and vegetables, and the train will be in charge of Luther Fuller, general agricultural agent.

The Chicago, Milwaukee & St. Paul has entered into an agreement with the Pullman Company for the operation of sleeping cars on the Pioneer Limited, operating between Chicago and the Twin Cities, and the Olympian, operating between Chicago and Seattle, Wash. The Chicago, Milwaukee & St. Paul will continue to operate its own sleeping cars on other trains. Pullman equipment will be furnished for 11 trains.

The Department of Agriculture has announced that at a meeting in New York on June 18 with officers of the Pennsylvania, arrangements were made to inaugurate daily meat grading service for purchases for dining cars and railroad restaurants. Service for the present will be confined to New York, and will be extended to other important centers as fast as the department inspectors are prepared to handle the business.

The Southern Pacific on June 14 finished track-laying on the Natron Cutoff, thereby completing the line which has been under construction during the past three years. This cutoff, with its connections, serves as an alternate route between San Francisco and Portland. It extends from Eugene, Ore., to Weed, Cal., and in addition to providing marked improvement in operation because of more favorable grades, effects a reduction in distance of 24 miles.

"Cattle improvement cars" are being operated by the Canadian Pacific in conjunction with the Provincial Department of Agriculture, the Saskatchewan Cattle Breeders' Association and the College of Agriculture on a three weeks' tour through Saskatchewan. The train carries four carloads of pure bred bulls, a car of steers and a car of dairy cattle. The bulls are being sold and the steers and dairy cattle are being carried for demonstration purposes.

Appointment of Alexander V. Dye, heretofore commercial attache of the Department of Commerce, as chief of the Transportation Division for a period of three months has been announced by Dr. Julius Klein, director of the Bureau of Foreign and Domestic Commerce. The appointment has been made to fill temporarily the vacancy caused by the resignation of the former head of the division, E. S. Gregg, who is now associated with the Western Electric Company. Mr. Dye for some time after the World War traveled in Europe as the representative of the American International Corporation.

Southwest Shippers' Advisory Board

The third annual and twelfth regular meeting of the Southwest Shippers' Advisory Board was held at Houston, Tex., on June 17. All of the board officers were re-elected to serve for another year. At this meeting the new arrangement for segregating the membership into commodity sections and selecting the committee members from these was inaugurated. The commodity committee reports to the board indicated a material improvement in business conditions generally throughout most of the southwest. Heavy increases during the next three months are expected in shipments of oats and wheat and substantial increases are also expected in shipments of perishable products, grain, petroleum and petroleum products and other commodities. The sections in the southwest reporting the greatest prosperity are those in the winter wheat belt, the Rio Grande valley and other southwest sections of Texas where shipments in perishable products have been greatest.

Trans-Missouri-Kansas Board Meeting

The Trans-Missouri-Kansas Advisory Board held its 14th regular meeting at Kansas City, Mo., on June 16, with an attendance of approximately 100 shippers and 175 representatives of the carriers. Reports of committees indicate that the requirements of all lines of industry for railroad transportation during the next quarter will be large. The cement committee reported a probable increase of 10 per cent in shipments during July, August and September over the same period last year. Hay crops will be curtailed 30 per cent because of dry weather. Higher prices are expected on this commodity as a result of the weather conditions. The committee expects heavy movements in December and a peak movement in January. The grain committee estimated the production of wheat in the State of Kansas to be 142,263,110 bu.; Missouri, 14,140,000 bu.; Oklahoma, 62,730,000 bu.; Texas, 31,479,000 bu. The early movements of this commodity to the mills throughout the middle west are expected to be large. The Manufacturers and Miscellaneous committee reported general business conditions to be approximately the same as at this time last year, with prospects for greatly improved business during the ensuing 90 days. The oil business is reaching a stage of economic soundness. Gasoline consumption probably will be 20 per cent greater during June, July and August than in the same period in 1925. The next meeting of the board will be held in St. Joseph, Mo., on September 15.

Motor Transport News

The California Highway commission is opposing the application of a proposed freight carrying motor truck line for a permit to operate and has announced that it will oppose any further increase in the number of truck lines operating on the public highways in California on the ground that these add too much to the already heavy wear on highway surfaces.



An Off-Line Erie and Lehigh Valley Station on Beach Street, New York

Commission and Court News

Interstate Commerce Commission

The petition of the Central Railroad of New Jersey for a reconsideration by the Interstate Commerce Commission of the case in which the commission criticized the practice of the railroad in sending locomotives to outside shops to be repaired was denied by the commission on June 22.

Orders were made public by the commission on June 22 providing for investigations of the rates on common brick in Alabama, Georgia and North Carolina, the rates being those prescribed by the Alabama Public Service Commission, the Georgia Public Service Commission and the North Carolina Corporation Commission for their respective states. The investigations were ordered on petition of the Atlanta, Birmingham & Atlantic and other railroads, averring that the orders issued by the state authorities required them to establish rates which are less for like distances than those permitted on interstate traffic.

Freight rates between points in Arizona, on the one hand, and points in California and New Mexico, on the other hand, were found "generally excessive" and unreasonable in a decision by the commission on the complaint filed by the Arizona Corporation Commission. A scale of class rates graded by mileage was prescribed as "only a temporary measure to accord the Pacific Southwest substantially the same scale of rates as now applies in the Pacific Northwest" and subject to reconsideration "in the event the class rates throughout the Mountain-Pacific group should be brought in issue in a general investigation or otherwise."

State Commissions

The Public Service Commission of New York State has extended to October 1, the suspension of passenger tariffs, filed by the Long Island, proposing a general increase of 20 per cent in the prices of season tickets.

The Public Service Commission of New York has denied a petition for a certificate authorizing the operation of a motor bus line between Bellmore (Long Island) and Freeport, holding that the petitioner produced no evidence that the Long Island Railroad is not affording adequate service between these towns.

Court News

High Speed at Unobstructed

Crossings Not Alone Negligence

The Circuit Court of Appeals, Sixth Circuit, holds that a railroad's negligence in a crossing injury case cannot be based alone upon a customary speed of 60 miles an hour accompanied by the statutory crossing warnings at ordinary, unobstructed country crossings.—B. & O. v. Reeves, 11 F. (2d) 329.

Arrangement with Employees to

Divide Net Income Upheld

The federal district court for southern Illinois holds that, since the United States Supreme Court has decided that the awards of the Labor Board are not binding but purely advisory, where the management of a railroad in dire financial straits, with operating incomes insufficient to pay operating expenses, called the men together and told them that the company would pay them all the income of the railroad proportionally after deducting the current supply bills, the employees who continued in the service accepted the proposition subject to the right of the Labor Board to investigate the reduction and give the parties the benefit of the moral sanction of a decision, which, in the circumstances, could be of little or no value. To require a railroad company to continue in business at a loss is beyond the power of Congress or a state; and it cannot be required to operate on a scale of wages which

produces continuous loss, and which will finally eat up the corpus of the property. It was held that the employees could not claim a credit for the difference between the Labor Board's finding and the amount paid them; and that the management, having given notice of the change in rate of pay, was not required to obtain the consent of the Labor Board before putting it into effect.—*Schuppan v. Peoria Ry. Terminal Co.*, 9 F. (2d) 448.

Crossing Watchman Not Entitled to Recover for Injury Due to His Own Negligence

The Circuit Court of Appeals, Sixth Circuit, holds that a crossing watchman struck by a truck thrown from the track as he rushed from the adjacent shanty could not recover under the federal Employers' Liability Act for his injuries, the collision being due to his own failure to warn the truck driver of the train, which he could not do from the shanty.—*Blunt v. Pennsylvania*, 9 F. (2d) 395.

Ordinance as to Stopping School Bus at Crossing for Protection of Children, Not of Driver

The Circuit Court of Appeals, Sixth Circuit, holds that Ohio Gen. Code Sec. 7731-2, requiring the driver of a school bus to bring it to a full stop before crossing tracks, and not to proceed until absolutely certain that the way is clear, is for the protection of the school children and not of the driver. But it imposes a duty on the driver, and if his failure to perform the duty contributed to the accident, he cannot recover for his injuries. "Absolutely certain" is held to refer to the state of mind of an ordinarily prudent driver and not to the fact.—*Kline v. Pennsylvania*, 9 F. (2d) 290.

United States Supreme Court

Land Grant Act Discounts

Apply to Mail Distributing Space

The Interstate Commerce Commission, as required by the Land Grant Act of July 28, 1916, fixed rates for all services required to be performed by the act, and declared that the land grant railroads were entitled to 80 per cent thereof under the law. The railroads urged that this provision of the law should not apply to the distributing space in cars, because the service of carrying distributing facilities cannot properly be construed as transportation of the mails as defined by law. But the commission held otherwise (*Railway-Mail Pay*, 56 I. C. C. 1, 77). Thereupon the Missouri Pacific petitioned the Court of Claims to give judgment against the United States for \$189,880 as compensation for the use of distributing space. The Court of Claims sustained a demurrer to the petition and entered judgment of dismissal (59 Ct. Cl. 524; 60 Ct. Cl. 183).

The Supreme Court of the United States has affirmed this judgment. The court says that although railway postal cars originated after the passage of the land grant acts it does not follow that such cars are not fairly within the meaning of those acts as essentially incident to transportation.

The Supreme Court agrees with the court below that the land grant acts are not to be so narrowly construed as to render their operation impracticable. What is to be transported is not mere weight, bulk or freight but the "mails," and the act must be construed to give effect to its purpose.—*Missouri Pacific v. United States*. Decided June 7, 1926. Opinion by Mr. Justice Sutherland.

Demurrage on Lumber Held for Reconsignment

In an action to have refunded as illegal a demurrage charge of \$10 a day on cars of lumber held at Aberdeen, S. D., for reconsignment, as being a penalty beyond the authority of the Interstate Commerce Commission to impose, the Supreme Court of the United States has affirmed judgment of the district court for western Missouri for the railroad 2 F. (2d) 291.

The Supreme Court says: "The efficient use of freight cars is an essential of adequate transportation and to secure it broad powers are conferred upon the commission. One cause of undue detention is diversion of the car from its primary use as an instrument of transportation by employing it as a place of storage, while

seeking a market. To permit a shipper so to use freight cars is obviously beyond the ordinary duties of a carrier. The right to assess charges for undue detention existed at common law. Now, they are subject, like other freight charges, to regulation by the commission.

"All demurrage charges have a double purpose. One is to secure compensation for the use of the car and of the track which it occupies. The other is to promote car efficiency by providing a deterrent against undue detention. The charge here in question, although called a penalty, is in essence an additional demurrage charge, increasing at a step rate. Such additional charges increasing with the length of the period of detention were introduced in respect to some cars by the National Car Demurrage Rules. They were widely applied while the railroads were under federal control. The power to impose such charges, if reasonable, is clear. Those here in question have been found by the commission to be reasonable. * * *

It is also held that the demurrage charge being a tariff provision and not a penal law, the tariff duly filed charges the shipper with the requisite notice. And as neither the Constitution nor the rule of reason requires that either freight or demurrage charges or the reconsignment privilege shall be the same for all commodities, there was no denial of equal protection of the laws because the charge was applicable only to cars loaded with lumber.—*Turner, Dennis & Lowry Lumber Co. v. C., M. & St. P.* Decided May 24, 1926. Opinion by Mr. Justice Brandeis.

Note. The tariff in question was cancelled in pursuance of the commission's order in *American Wholesale Lumber Co. v. Director General*, 66 I. C. C. 393 (1922). The commission then found that the charge was reasonable when made and while in force, but that there being no longer congestion of cars, it was no longer necessary.

Exclusive Jurisdiction of I. C. C.

Over Establishment of Junctions

The Jackson & Eastern having instituted a proceeding under a Mississippi statute to secure by eminent domain a connection with the Alabama & Vicksburg at a point east of Jackson, called Curran's Crossing, the A. & V. sought to enjoin it from pursuing the eminent domain proceeding by suit in the state Chancery Court, expressing willingness to permit a junction, but asserting that the point selected was an improper one which would burden interstate commerce, and claiming that the Interstate Commerce Commission has exclusive jurisdiction over the establishment of connections between interstate railroads; and that it had not authorized this connection. The chancellor's decree finding the connection was a proper one was, on a second appeal, affirmed by the State Supreme Court (136 Miss. 726) which overruled the A. & V.'s contention that the commission had exclusive jurisdiction over the establishment of such junctions. The Supreme Court of the United States has reversed the state court's decree, holding that the commission has exclusive jurisdiction. The proposed track was to be built between the main lines of the two roads, and would be located between two trestles, near a highway crossing, on a curve, on a fill, and within the flood area of Pearl River. "The establishment of the junction at that point," the court says, "would, if the objection is well founded, obviously imperil interstate commerce. The fact that it may do so shows that the jurisdiction of the commission over such connections must be exclusive if the duty imposed upon it to develop and control an adequate system of interstate rail transportation is to be effectively performed. Moreover, the establishment of junctions between the main lines of independent carriers is commonly connected with the establishment of through routes and the interchange of car services, and is often but a step toward the joint use of tracks. Over all of these matters the commission has exclusive jurisdiction. It is true that in this case the state court found that the place selected for the junction was a proper one. But the power to make the determination whether state action will obstruct interstate commerce inheres in the United States as an incident of its power to regulate such commerce. Compare *Colorado v. United States*, decided May 3, 1926. In matters relating to the construction, equipment, adaptation and use of interstate railroad lines, with the exceptions specifically set forth in paragraph 22 (Act to Regulate Commerce, Sec. 1) Congress has vested in the commission the authority to find the facts and thereon to exercise the necessary judgment."—*Alabama & Vicksburg v. Jackson & Eastern*. Decided May 24, 1926. Opinion by Mr. Justice Brandeis.

Foreign Railway News

Fifteen persons killed is the result of a derailment reported in a press dispatch from Cape Town, South Africa, June 10; with 40 or more persons injured. The derailment occurred at Salt River, two miles east of Cape Town, and one of the killed was Sir Malcolm Searle, a judge of the supreme court of South Africa.

Russian Railways to Spend \$50,000,000

The railway administration of the Russian Soviet government is expending \$50,000,000 on reconstruction during the current fiscal year, ending October 1 next, as compared with \$20,000,000 in 1924-5, according to a bulletin issued by the Russian Information Bureau at Washington, D. C.

In addition to repair of roadbed and of railway structures of all kinds, the program includes the replacement of 20,000,000 ties and 3,600 switches, the laying of 1,470 miles of new rails, the rebuilding of old bridges with a total weight of 18,000 tons and the reconstruction of 640 small bridges. The work further includes program for the development of junctions and intermediate stations, and the establishment of new yard tracks and sidings, in all involving the laying of 535 miles of new track. New stations, shops and freight station facilities also will be built during the year.

Motors versus Railways in New Zealand

Passenger revenues of the New Zealand railways are said to be much affected by the competition of motor services operating on parallel routes, according to Vice-Consul Hudson at Wellington. In the neighborhood of Wellington alone some 30 cars are operating on routes from 15 to 125 miles in length, the main service being from Wellington to Wanganui. Ostensibly catering to inter-town traffic, it actually does a little more than one-fifth interior traffic as against four-fifths through traffic. The quicker service and cheaper rates charged, added to the fact that connections with other bus lines are conveniently made, have diverted traffic from the railway.

There is scarcely a main railway line in New Zealand that is not feeling the competition of overland motor service. On the other hand, there are also many motor feeder services in districts which are not yet served by rail. The policy of the New Zealand railways is to encourage and initiate feeder services. The parallel services are being combated by fare concessions, more convenient, if not speedier, time tables, and other concessions.



Underwood & Underwood

The First Day of the Strike at Waterloo Station, London

Equipment and Supplies

Locomotives

THE ATCHISON, TOPEKA & SANTA FE is inquiring for 40 locomotive tenders of 15,000-gal. capacity.

THE CITY OF ST. LOUIS has ordered one four-wheel switching locomotive from the Baldwin Locomotive Works.

THE WAUKEGAN GENERATING COMPANY has ordered one six-wheel switching locomotive from the Baldwin Locomotive Works, Philadelphia.

THE UNION TERMINAL has ordered one six-wheel switching locomotive from the Baldwin Locomotive Works. Inquiry for this equipment was reported in the *Railway Age*, the issue of May 29.

THE CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA has ordered 8 Mikado type locomotives from the American Locomotive Company. Inquiry for this equipment was reported in the *Railway Age* of June 5.

THE LOS ANGELES JUNCTION has ordered a six-wheel switching locomotive from the American Locomotive Company. This locomotive will have 21 in. by 26 in. cylinders and a total weight in working order of 146,000 lb.

THE TOLEDO, ANGOLA & WESTERN has ordered a six-wheel switching locomotive from the American Locomotive Company. This locomotive will have 21 in. by 26 in. cylinders and a total weight in working order of 146,000 lb.

THE CHICAGO & NORTH WESTERN has ordered one 60-ton oil-electric locomotive from the American Locomotive Company, the General Electric Company and the Ingersoll-Rand Company, which companies co-operate in its manufacture in addition to the one reported in the *Railway Age* of June 12.

Freight Cars

THE WABASH is inquiring for 40 caboose cars.

THE CHICAGO, BURLINGTON & QUINCY is inquiring for 300 underframes.

DARLING & Co., Chicago, are inquiring for from 8 to 10 box cars of 50 tons' capacity.

THE GREAT NORTHERN has ordered 10 steel underframes from the Siems-Stembel Company.

THE GULF REFINING COMPANY is inquiring for 4 gondola cars of 40 tons' capacity and 26 gondola cars of 50 tons' capacity.

J. V. BOXLEY & Co. have ordered eight 30-cu. yd. lift door, air dump cars, from the Koppel Industrial Car & Equipment Company.

W. W. BOXLEY SON & Co., Roanoke, Va., have ordered eight 20-cu. yd. lift door, air dump cars, from the Koppel Industrial Car & Equipment Company.

THE CHESAPEAKE & OHIO is preparing specifications covering new bodies for 500 gondola cars of 70 tons' capacity, to be built and installed on second-hand trucks.

THE CHICAGO & NORTH WESTERN has ordered 500 stock cars excluding trucks from the Illinois Car & Mfg. Co., and 25 caboose underframes from the Bettendorf Company. Inquiry for this equipment was reported in the *Railway Age* of May 29.

Motor Vehicles

THE CHICAGO, MILWAUKEE & ST. PAUL is in the market for a motor bus.

Iron and Steel

THE GREAT NORTHERN is inquiring for 10,000 tons of rail.

THE NEW YORK CENTRAL is inquiring for 300 tons of steel for bridges.

THE MISSOURI PACIFIC is inquiring for 1,000 tons of structural steel for two bridges.

THE LOUISVILLE & NASHVILLE is inquiring for 1,500 tons of structural steel for bridges.

THE SOUTHERN PACIFIC is inquiring for 5,000 tons of tie plates, 13,000 kegs of spikes and 1,000 kegs of bolts.

THE ATCHISON, TOPEKA & SANTA FE has ordered 200 tons of structural steel for a ferry slip at Oakland, Cal., from the Moore Drydock Company.

THE PENNSYLVANIA is reported to be inquiring for 6,000 tons of splice bars, 3,500 tons of tie plates, 3,000 kegs of track bolts and 700 tons of spikes.

THE PENNSYLVANIA has ordered 550 tons of bridge steel from the American Bridge Company. This company is inquiring for 300 tons of steel for bridges.

THE NORTHERN PACIFIC has ordered 150 tons of structural steel for a bridge at Sumner, Wash., from the American Bridge Company, and 375 tons for a bridge at Tacoma, Wash., from the Mt. Vernon Bridge Company.

THE SOUTHERN RAILWAY is inquiring for 10,000 tons of rail and 700 tons of structural steel. This company has ordered 1,600 tons of structural steel from the Virginia Bridge & Iron Company, and 600 tons from the American Bridge Company.

THE SOUTHERN PACIFIC has placed an order with the Bethlehem Steel Company for 12,000 tons of rail in addition to the 12,000 tons previously ordered from the Bethlehem Steel Company and the 10,000 tons ordered from the Colorado Fuel & Iron Company.

Machinery and Tools

THE MAINE CENTRAL has ordered a 48-in. Putnam car wheel borer from Manning, Maxwell & Moore, Inc.

THE CHICAGO, MILWAUKEE & ST. PAUL has ordered two axle lathes from the Niles-Bement-Pond Company.

THE ATLANTIC COAST LINE is buying the full equipment of machine tools for its new shops at Ucita, Fla.

THE SOUTHERN PACIFIC has ordered a 90-in. Putnam driving wheel lathe from Manning, Maxwell & Moore, Inc.

THE NEW YORK CENTRAL has ordered a 100-ton Chambersburg hydraulic bushing press from Manning, Maxwell & Moore, Inc.

THE CHARLESTON & WESTERN CAROLINA has ordered a 250 to 500 ton Chambersburg mounting and demounting wheel press from Manning, Maxwell & Moore, Inc.

THE NASHVILLE, CHATTANOOGA & ST. LOUIS has ordered a 200 to 400 ton Chambersburg mounting and demounting wheel press from Manning, Maxwell & Moore, Inc.

THE ILLINOIS CENTRAL has ordered a 24-in. by 10-ft. geared head lathe, a 4-in. pipe machine and a Universal hydraulic flanging press from Manning, Maxwell & Moore, Inc.

THE NILES-BEMENT-POND COMPANY has received orders for machine tools as follows: two axle lathes; a 100-ton bushing press; 30-in. by 14-ft. lathe; 5-ft. radial drill; car wheel borer; vertical shaper and a die sinker.

THE UNION PACIFIC has ordered one Universal cutter and reamer grinder; two Bridgeport guide bar grinders; one stock adjusting machine; one Micro internal grinder; one 18-in. by 10-ft. geared head engine lathe; one 20-in. by 12-ft. geared head engine lathe; one 24-in. by 12-ft. geared head engine lathe and one 30-in. by 16-ft. geared head engine lathe from Manning, Maxwell & Moore, Inc.

Signaling

THE SOUTHERN has ordered from the General Railway Signal Company, a mechanical interlocking, 27 working levers for Biltmore, N. C.

THE NEW YORK CENTRAL has ordered from the General Railway Signal Company, an electric interlocking for Gibson, Ind.; 14 working levers.

THE CHICAGO & NORTH WESTERN has ordered from the General Railway Signal Company, six additional locomotive equipments for automatic train control.

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS has ordered from the General Railway Signal Company an electric interlocking, 83 working levers, for Pana, Ill.

THE NEW YORK, CHICAGO & ST. LOUIS has ordered from the Union Switch & Signal Company a mechanical interlocking, 20 working levers, for South Wataah, Ind.

THE DETROIT, TOLEDO & Ironton has contracted with the General Railway Signal Company to make extensive changes in the electric interlocking at Hamler, Ohio, the crossing of the Baltimore & Ohio.

THE BINGHAM & GARFIELD has ordered from the General Railway Signal Company, material for the installation of automatic block signaling between Bingham, Utah, and Magna, 17 miles. This order includes 42 model 2-A signals, 136 relays, 24 transformers and other material.

THE ERIE has made a contract with the Regan Safety Devices Company for an experimental installation of intermittent induction system of automatic train control, including speed control, between Attica, N. Y., and Depew, 22 miles.

THE PENNSYLVANIA has ordered from the Union Switch & Signal Company a complete electro pneumatic interlocking for "WC" Cabin, Weirton Junction, W. Va.; a 51-lever machine, 41 switch movements and other apparatus; also a 39-lever electro pneumatic interlocking for Bayard, Ohio; also material for extensive additions to the mechanical interlocking at Hawthorne Junction, Ind.; also material for extensive additions to the electro mechanical interlocking at London, Ohio.



Bridge Derrick Placing Concrete Bridge Slab on Illinois Central Track Elevation Work

Supply Trade News

Frederick W. Steckman has become associated with the **Regan Safety Devices Company**, at Washington, D. C.

L. G. Plant has been appointed sales agent for the **Ogle Construction Company**, Chicago, in addition to his duties as general sales agent for the **Locomotive Terminal Improvement Company**.

A. E. Hitchner, assistant manager of the East Pittsburgh, Pa., plant of the **Westinghouse Electric & Manufacturing Company**, has been appointed manager of the Los Angeles, Cal., office.

The **West Disinfecting Company** has removed its executive, sales, purchasing and advertising departments from 411 Fifth avenue, New York City, to its new building at Barn street (near Bridge Plaza), Long Island City, N. Y.

W. G. Andrews, sales manager, central division, of Pratt & Lambert, Inc., Buffalo, N. Y., tendered his resignation, effective June 15, to become chairman of the executive committee and general manager of the **Tucker Rubber Corporation**, Buffalo, N. Y. Mr. Andrews will remain a director of Pratt & Lambert, Inc.

Tom C. King, who has been identified for fifteen years with railroad sales, has organized the **Railway Products Company**, 908 First National Bank building, Pittsburgh, Pa., and will serve as its president. Mr. King was formerly connected with the **Kilby Car & Foundry Company** and the **Anniston Steel Company**, Anniston, Ala. Later he organized the **National Forge Company** at Anniston and served as its secretary and treasurer until the company's plant was moved to Louisville, Ky., when he was appointed vice-president, with headquarters at that city. In 1923 he became manager of railroad sales for the **Pittsburgh Knife & Forge Company**. The **Railway Products Company** handles all railroad sales for the **Pittsburgh Knife & Forge Company** and the **Keystone Bronze Company**, Pittsburgh; also handles sales for the **Neely Nut & Bolt Company**, Pittsburgh; **Greenville Steel Car Company**, Greenville, Pa.; **W. H. Miner**, and the **Symington Company**, in restricted territory and in special cases.

Charles Leslie Rice, assistant works manager at the Hawthorne works of the **Western Electric Company**, has been appointed works manager of the Hawthorne works, Chicago, in charge of all its manufacturing functions there. **S. S. Holmes** is now assistant works manager. Mr. Rice succeeds to the position formerly held by **G. C. Stoll**.

A. Milton Buck has joined the sales force of the **Bridgeport Brass Company**, Bridgeport, Conn. Mr. Buck will have his headquarters at Washington, D. C., and his territory will include Washington, D. C., the states of Maryland, Virginia and West Virginia. He will specialize on sales of **Bridgeport-Keating** flush valves and **Plumrite** brass pipe.

Charles V. Allen, assistant treasurer of the **Westinghouse Electric International Company**, has been elected treasurer

and assistant secretary, to fill the position recently left vacant by the resignation of **H. A. Carmichael**. Mr. Allen has had more than thirty years' direct contact with the manufacturing and sales division of the **Westinghouse Electric & Manufacturing Company** and the **Westinghouse Electric International Company**.

John E. Slater, professor of transportation at the University of Illinois, has resigned to accept a position as assistant to the president of the **American Brown Boveri Electric Corporation**, with headquarters at Camden, N. J. He will confer with and report to **C. L. Bardo**, vice-president at Camden. Mr. Slater was born in 1891 at Somerville, Mass., and was educated in the public schools of that city. He graduated from **Harvard University** with the class of 1913, having had one year of graduate work in the **School of Business Administration**. He then served for one year in the general office of the **Union Pacific** at New York, following which he entered the service of the **New York, New Haven & Hartford**. His first position with the **New Haven** was that of statistician for a committee which was analyzing the results of electric operation. About a year later he became statistician and special accountant in the accounting department. In January, 1917, he was appointed chief clerk to the general manager. He was commissioned a first lieutenant of engineers in February, 1918, and the following month sailed for France where he remained until May, 1919. His work with the army was entirely along railroad lines with the advance section, in the latter part of which he held the position of superintendent of the railroad division, supplying the second and later the third army. He was discharged from the army with the commission of captain, and returned in July, 1919, to the **New York, New Haven & Hartford** as special assistant, later becoming assistant to the general manager. He resigned from that position in September, 1925, to go as professor of transportation at the University of Illinois. Mr. Slater's work with the railroad consisted primarily of analyzing railroad operations and in preparing data in connection with numerous cases before state commissions and the **Interstate Commerce Commission**. He has contributed a number of articles to the *Railway Age* on the subject of operating statistics and operating analysis.



J. E. Slater



T. C. King

Justus H. Schwacke, president and a director of **William Sellers & Co., Inc.**, Philadelphia, Pa., resigned and retired to private life on May 31. Mr. Schwacke had been with the **Sellers Company** continuously since July, 1862. He was elected secretary when the company was incorporated in 1886, director in 1902, manager in 1905 and president in 1922. **Alexander Sellers** was elected president of **William Sellers & Co., Inc.**, on June 1 following the resignation of Mr. Schwacke. Mr. Sellers has been with the company since 1896, a director since 1902 and vice-president since 1905.

American Car & Foundry Company

The **American Car & Foundry Company's** annual report for the fiscal year ended April 30, 1926, shows net earnings available for dividends of \$6,102,898 equivalent after allowances for the 7 per cent preferred dividends to \$6.67 a share on the outstanding 600,000 shares of no par common stock. The annual report is in the form of a consolidated statement covering operations of the **American Car & Foundry Company**, the **American Car & Foundry Securities Corporation** and the **American Car & Foundry Export Company**. The report for the fiscal year ended April 30, 1925, covering the operations of the **American Car & Foundry Company**

only, showed net earnings available for dividends of \$6,164,103 or \$6.77 a share. The earnings statement for the year ended April 30, 1926, compares with last year's as follows:

	1926	1925
Earnings from all sources for the fiscal year ended April 30—before deducting repairs, renewals, etc., as noted hereunder—and after making provision for taxes	\$9,274,572	\$9,781,085
Less: Renewals, replacements, repairs, new patterns, flasks, etc.	2,171,673	3,616,981
New earnings	\$6,102,898	\$6,164,104
Less:		
Dividends—		
On preferred capital stock, 7 per cent \$2,160,000		
On common capital stock	3,600,000	5,700,000
Surplus earnings for the year	\$402,898	\$464,104

President W. H. Woodin, in his remarks to stockholders, gives the following details concerning the operations of his company and the present status of the railway equipment market:

"The railroad buying of new equipment during the year has not been in the volume that reasonably might have been expected. It has been done spasmodically and at prices that have made a profit possible only by keeping costs at a minimum—this calling for the practice of the utmost economy and efficiency in all departments of the company's activities.

"The railroads generally are in good financial condition. There is hanging over them no threat of legislation adversely affecting their interests. Undoubtedly there is need of additional equipment if they are to discharge adequately their functions as carriers of the products of the country's industry. These conditions justify the expectation of increased buying activity, and when that comes there is no reason to doubt that the company will get its fair share of the business.

"There has been a very noticeable and progressive lessening of the volume of business done in the rebuilding and repairing of old equipment. This is due, in part, to a more or less insistent demand that the railroads should in their own shops rebuild and repair their worn equipment. Such demand is not justified on the score of cost. Your management has given this phase of the industry its earnest attention, and is convinced that the cost to the roads of themselves doing such work is substantially in excess of the cost of having it done in the shops and with the trained organizations of concerns such as your company. It is to be hoped that the roads will give to this subject the further thought and study its importance deserves.

"During the year just ended the volume of the company's export business has been much greater than during the preceding year, and this increase in volume has brought with it a corresponding increase in the profit realized. Close attention is given to the credit risk with respect to all such business offered.

"In the manufacture and sale of miscellaneous products, the company has done a business satisfactory both as to quantity and profit.

"The year closed with a fair amount of business booked. Since that date and up to the time of this writing, there has been some renewal of buying—and there is no cause to complain with respect to the share of such business obtained by the company.

"The management for some time past has been giving careful study to the problems in transportation, both of passengers and of freight, presented by the growing use by the electric and steam railroads of automotive vehicles, including motor buses, motor trucks and motor-driven rail cars. Such vehicles have already demonstrated their value in service supplementary to that of many street and inter-urban electric railways, and for use by branch lines of steam railways where, under present-day costs, the available traffic has not been sufficient to permit of profitable operation by the older methods, and unquestionably they will play an increasingly important part as factors in the improvement of railway earnings. Recognizing these conditions, the management concluded some time ago that in the manufacture and marketing of such automotive equipment there lay a legitimate and profitable field for an extension of the company's activities—and during the year just closed it has entered that field by the organization of American Car & Foundry Motors Company and the acquisition of a controlling interest in the newly-organized Brill Corporation. There remain to be worked out many problems in the co-ordination of automotive service with that of steam and electric roads, as well as in the further development of equipment adapted thereto. That they will be worked out satisfactorily, and to a profitable conclusion, the management has little doubt."

Obituary

C. W. Pank, who resigned as vice-president of Fairbanks, Morse & Company, in January, 1924, died on June 21 at Evanston, Ill.

Railway Construction

ATLANTIC COAST LINE.—The Interstate Commerce Commission has authorized a change in route for the Atlantic Coast Line's Thonotosassa (Fla.) to Dade City line, which was authorized in March. The change shifts the main stem of the line eastward 4 miles to serve Zephyrhills and it will join the road's west coast line at Richland, 7 miles south of Dade City, continuing along this route to Dade City. The change in route will make the new line 22.5 miles long as compared to 21 by the old route.

BANGOR & AROOSTOOK.—This company has authorized the retirement of an old bridge at Millinocket, Me., and its replacement by a new deck-girder structure of E-60 capacity; also raising the grade 6 ft. to remove a sag; total cost, approximately \$49,000. Fabrication of the bridge will be performed by the American Bridge Company—the remainder of the work by company forces.

GULF COAST LINES.—New bids are being received for the construction of a passenger station at Brownsville, Tex., the old plans upon which bids were asked having been revised.

MAINE CENTRAL.—This company has authorized the installation of a new wheel shop, blacksmith shop and passenger car repair track at Rigby, Me., and the transfer of machinery and tools to that place from Thompson's Point, Me. The project will cost approximately \$72,000. It has also authorized the replacement of the old wheel shop and wash room building by a new shop, and the installation of new and second-hand machinery and a new transfer table at Waterville, Me., to cost approximately \$83,000.

MISSOURI PACIFIC.—The lease on four floors of the Railway Exchange, St. Louis, Mo., occupied by the general headquarters of the Missouri Pacific, has been sold, and the construction of a 15-story office building is contemplated. The present offices in the Railway Exchange will be vacated within 18 months.

NORTHERN PACIFIC.—The construction of a bridge over the Mississippi River at Eighteenth avenue, Minneapolis, Minn., at a cost of \$350,000, is expected to start next month.

OREGON ROADS.—The Public Service Commission of Oregon has petitioned the Interstate Commerce Commission for a reopening and further hearing of the proceeding in which the commission recently declined to order the construction of a cross-state railroad in Oregon but granted, with conditions the applications of several railroads to build other lines in the state.

PENNSYLVANIA.—A contract has been awarded to Fischbach & Moore, Inc., New York, for electrical work in connection with the American Railway Express Company building at Sunnyside Yard, Long Island City, N. Y., to cost approximately \$62,000. A contract has also been awarded to the Herrick-Whipple Construction Company, Erie, Pa., for masonry for the subway at 12th street, Erie, Pa.

ST. LOUIS SOUTHWESTERN.—The Hospital Association is contemplating the construction of a nurses' home at its hospital in Texarkana, Ark.

ST. LOUIS, TROY & EASTERN.—The Interstate Commerce Commission has issued a certificate authorizing this company to construct an extension in the form of an elevated structure to the eastern end of the McKinley Bridge in Venice, Ill., 1.53 miles, at an estimated cost of \$863,000.

TEXAS ROADS.—The Interstate Commerce Commission has assigned for oral argument at Washington on July 19 the applications for authority to build new lines in Texas filed by the Texas, Panhandle & Gulf, the Pecos & Northern Texas, the Fort Worth & Denver South Plains, and the Quanah, Acme & Pacific.

WABASH.—Bids are being taken for a two-story mill building 35 ft. by 187 ft. at Oakwood, Mich.

Railway Financial News

ATLANTON, TOPEKA & SANTA FE.—Acquisition.—Hearing was held on June 23 before Examiner Burnside of the Interstate Commerce Commission on this company's application for authority to acquire control of the New Mexico Central.

ATLANTA, BIRMINGHAM & ATLANTIC.—Sold.—Sale of the property at foreclosure was made at Atlanta on June 22 to a reorganization committee representing the bondholders. The price paid was \$4,500,000 which represents approximately 60 cents on the dollar of the par value of the bonds. The bondholders' committee will hold title to the road pending a decision by the Interstate Commerce Commission on the application of the Atlantic Coast Line to take over the property. The sale was made over the protest of representatives of the stockholders who will be wiped out in the proposed reorganization plan.

BALTIMORE & OHIO.—Equipment Trust Certificates.—The issue of equipment trust certificates of \$7,475,000 reported in the *Railway Age* of June 19 as having been authorized by the Interstate Commerce Commission, is in connection with the purchase of equipment including 25 locomotives, 3,000 freight cars and 78 passenger train cars having a total approximate cost of \$10,679,198.

BOSTON & MAINE.—Reorganization Plan Opposed.—Edmund D. Codman, of Boston, Mass., on behalf of himself and other stockholders, has filed with the Interstate Commerce Commission a petition protesting against approval of the reorganization plan on the ground that it is more drastic than is required by the present financial condition of the company and market conditions.

CANADIAN PACIFIC.—Equipment Trust.—The Union Trust Company of Pittsburgh, the Bankers Trust Company of New York and Brown Brothers & Co. have sold \$12,000,000 4½ per cent equipment trust certificates, series B, dated January 1, 1926, and maturing in equal semi-annual amounts from December 1, 1926 to June 1, 1938, inclusive. Principal and dividends are to be payable in United States coin at the Union Trust Company of Pittsburgh or at the Bankers Trust Company. The certificates were sold at prices to yield from 4.00 to 4.55 per cent.

CHICAGO, MILWAUKEE & ST. PAUL.—1925 Earnings.—Receivers have issued a statement entitled 1925 Statistics of Operations which shows that in that year the company operated with a deficit after interest and other charges of \$3,867,012. In 1924 there was a deficit of \$1,727,777. Selected items from the income statement follow:

CHICAGO, MILWAUKEE & ST. PAUL			
	1925	1924	
Average mileage operated.....	11,204.99	10,986.92	
Railway operating revenues.....	\$162,020,693	\$158,366,458	
Maintenance of way.....	\$22,141,286	\$22,449,379	
Maintenance of equipment.....	39,680,380	34,120,037	
Transportation.....	61,074,468	61,880,508	
Total operating expenses.....	\$130,449,632	\$125,550,061	
Operating ratio.....	80.51	79.28	
Net revenue from operations.....	\$31,571,061	\$32,816,398	
Railway tax accruals.....	8,938,834	9,014,061	
Railway operating income.....	\$22,566,163	\$23,674,506	
Net railway operating income.....	Not shown	in report	
Non-operating income.....	\$1,903,384	\$2,525,986	
Gross income.....	\$24,469,547	\$26,200,492	
Rent for leased roads.....	1,059,368	1,053,166	
Interest on funded debt.....	19,448,840	20,447,614	
Total deductions from gross income.....	\$28,336,559	\$27,928,270	
Net deficit.....	\$3,867,012	\$1,727,777	
Income applied to sinking and other reserve funds.....	\$67,599	\$140,829	
Deficit for year carried to profit and loss.....	\$3,934,611	\$1,868,606	

CINCINNATI, INDIANAPOLIS & WESTERN.—1925 Earnings.—Annual report for 1925 shows net income after interest and other charges of \$125,855 comparing with \$92,195 in 1924. Selected items from the income statement follow:

CINCINNATI, INDIANAPOLIS & WESTERN			
	1925	1924	Increase or decrease
Average mileage operated.....	347.02	347.02	.....
Railway operating revenues.....	\$4,787,439	\$4,520,729	\$266,706
Maintenance of way.....	\$635,603	\$602,418	\$33,185
Maintenance of equipment.....	965,920	958,662	7,258
Transportation.....	1,936,186	1,826,367	109,819
Total operating expenses.....	\$3,953,289	\$3,780,199	\$173,090
Operating ratio.....	82.58	83.62	1.04
Net revenue from operations.....	\$834,146	\$740,530	\$93,616
Railway tax accruals.....	227,979	228,214	—235
Railway operating income.....	\$605,797	\$511,831	\$93,996
Equipment rents—Net Dr.....	138.0 4	33 841	99,241
Joint facility rents—Net Dr.....	167,194	164,148	3,046
Net railway operating income.....	\$300,519	\$308,810	\$8,290
Non-operating income.....	65,015	22,186	42,829
Gross income.....	\$365,534	\$330,996	\$34,539
Rent for leased roads.....	1,419	1,310	109
Interest on funded debt.....	217,254	226,254	—9,000
Total deductions from gross income.....	\$239,679	\$238,800	\$879
Net income.....	\$125,855	\$92,195	\$33,660

ERIE.—Bonds.—The Interstate Commerce Commission has authorized this company to pledge \$17,000,000 of its first consolidated mortgage general-lien 4 per cent bonds and certain of its general mortgage 4 per cent convertible 50-year bonds as collateral security for \$10,000,000 of two-year notes.

ERIE.—Pledge.—The Erie has filed an application with the Interstate Commerce Commission to pledge \$17,000,000 of its first consolidated mortgage general lien bonds and \$15,000,000 at market value of its general mortgage convertible bonds as security for \$10,000,000 of 2-year 5 per cent notes.

GALVESTON WHARF.—Bonds.—This company has applied to the Interstate Commerce Commission for authority to issue \$1,250,000 of 5½ per cent mortgage bonds, for the purpose of extending its facilities and refunding certain maturing bonds.

GREAT NORTHERN.—Bonds.—In a supplemental application filed with the Interstate Commerce Commission this company asks that the commission's previous authorization of the authentication and delivery of \$60,000,000 of general mortgage 5 per cent bonds be amended, as to the \$45,000,000 not yet issued, so as to provide for a 4½ per cent interest rate. The company has issued \$15,000,000 of the bonds at 5 per cent and now wishes to issue \$15,000,000 additional, to reimburse its treasury in part for expenditures from income from 1911 to 1921 for additions and betterments, construction of new lines, etc., not previously capitalized, but states that it believes the market for railroad securities is now and probably in the future will be such that it is not financially advisable to sell bonds bearing so high a rate of interest as 5 per cent. It is proposed to sell the bonds at not less than 91.

Bonds Sold.—J. P. Morgan & Co., the First National Bank and the National City Company have sold at 94, \$15,000,000 general mortgage 4½ per cent bonds, series D, dated July 1, 1926 and maturing July 1, 1976.

INTERNATIONAL GREAT NORTHERN.—Bonds.—Kuhn, Loeb & Co. have sold \$6,000,000 first mortgage 5 per cent bonds, series B, maturing July 1, 1956, at 95 per cent to yield over 5.23 per cent if held to maturity. Then entire series will be redeemable at the option of the company at any interest date at 102½. Further details of the issue follow:

These bonds will be issued under the first mortgage of the company, dated July 1, 1922, and will be secured by a direct first mortgage on all property now owned or hereafter acquired by the company, subject as to after acquired property to pre-existing liens and purchase money liens. The property includes 1,105 miles of railroad, and equipment having a book value, as of December 31, 1925, of \$6,649,142, after deducting depreciation and equipment obligations then outstanding. The first mortgage bonds outstanding, including the present issue, are at the low rate of approximately \$21,000 per mile of road owned.

The proceeds of the sale of these bonds are to be applied to the redemption of \$2,400,000 principal amount of 6 per cent secured notes of the company and to reimburse the treasury of the company, in part, for capital expenditures heretofore made.

The first mortgage bonds are followed by \$17,000,000 adjustment mortgage bonds, and by \$7,500,000 of common stock, all of which stock (except directors' qualifying shares) is owned by New Orleans, Texas & Mexico Railway Company. Over 86 per cent of the stock of New Orleans, Texas & Mexico Railway Company is owned by Missouri Pacific Railroad Company.

The total authorized amount of first mortgage bonds is limited to \$40,000,000, of which there will be outstanding in the hands of the public, upon the completion of this financing, \$17,250,000 of Series "A" 6 per cent bonds and \$6,000,000 of Series "B" 5 per cent bonds. Approximately \$2,000,000 additional Series "B" bonds will be in the company's treasury, unpledged, and \$500,000 Series "A" bonds are pledged to secure a surety

bond. The remainder of the bonds are issuable from time to time to reimburse, to the extent of 80 per cent, expenditures for the acquisition of new properties or securities representative thereof, or for extensions, equipment, betterments and improvements.

KANSAS, OKLAHOMA & GULF.—Investigation Discontinued.—The Interstate Commerce Commission on June 23 announced the discontinuance of its investigation, instituted on June 8, 1925, into the history, management, financial and other operations, accounts and practices of this company, stating that "while the circumstances under which the appointment of a receiver was obtained seem to have been most unusual and very dangerous, as a precedent, to investors in railroad securities, it seems that nothing substantial can be gained by continuing this investigation. It does not appear that the public interest requires further inquiry into the affairs of the respondent under our order of June 8, 1925." The report states that the investigation was ordered upon representations made by the then treasurer and the then president of the road and upon "certain information" laid before it. Commissioner Hall, concurring in the conclusion that the proceeding be discontinued, said he did not concur in the "criticism here volunteered as to the manner in which a federal court has seen fit to exercise its powers" and that Commissioners Woodlock and Taylor joined in this expression.

MISSOURI-KANSAS-TEXAS.—Bonds.—This company has filed with the Interstate Commerce Commission an amendment to its application of January 2 in which it asked authority to issue nominally \$18,217,726 of prior lien mortgage 6 per cent bonds, so as to provide for the issuance only of \$9,018,438 of 5 per cent bonds, to reimburse the treasury in part for expenditures from surplus.

MISSOURI, KANSAS & TEXAS.—Tentative Valuation.—The Interstate Commerce Commission has issued its tentative valuation report, finding a final value for rate-making purposes of \$81,900,513 of the property owned and \$84,952,492 for the property used as of 1918. This covers the Missouri, Kansas & Texas, the Missouri, Kansas & Texas Terminal Company of St. Louis, the Boonville Railroad Bridge Company and the Oklahoma Belt, but does not cover the Missouri, Kansas & Texas of Texas. The outstanding capitalization on valuation date was \$154,628,674 and the investment in road and equipment, as stated in the company's books, was \$172,830,501, which the report readjusts to \$121,444,162. The cost of reproduction new, exclusive of land, is given as \$89,021,301 for the owned property and \$91,081,979 for the used property, while the cost of reproduction less depreciation is given as \$68,636,232 for the owned property and \$70,420,163 for the used property. The company owned 32,403 acres of land, which were given a present value of \$7,030,415, and held securities of other companies of a par value of \$48,024,100 and a book value of \$21,399,426.

MURFREESBORO-NASHVILLE SOUTHWESTERN.—Acquisition of Line.—The Interstate Commerce Commission has issued a certificate authorizing this company, which was organized on July 19, 1925, to operate a line from Nashville, Ark., to Murfreesboro, 15 miles. The line was formerly a part of the Memphis, Dallas & Gulf which was sold at foreclosure October 15, 1922. The line which is proposed to be taken over by the new company was operated for a while by the Graysonia, Nashville & Ashdown which acquired other portions of the Memphis, Dallas & Gulf and had an option to purchase that portion from Nashville to Murfreesboro but finally decided not to exercise it.

NEW ORLEANS, TEXAS & MEXICO.—Bonds.—This company has applied to the Interstate Commerce Commission for authority to issue \$4,495,900 of first mortgage 5 per cent bonds, to be exchanged for outstanding income bonds at any time to and including June 30, 1927.

PERE MARQUETTE.—Bonds.—This company has applied to the Interstate Commerce Commission for authority to issue and sell or pledge \$2,868,000 of first mortgage 5 per cent bonds, to reimburse the treasury for expenditures for additions and betterments.

PITTSBURGH & WEST VIRGINIA.—New Capitalization Plan Abandoned.—The Interstate Commerce Commission, at the request of the applicant, has vacated and set aside its order of March 22 in which it authorized an issue of \$15,117,550 of common stock and a like amount of preferred stock to be exchanged for the present

\$30,235,100 of common stock. On April 23 F. H. Harvey, secretary of the company, wrote to the commission advising that the plan for changing the capital structure had been abandoned and that it would not take advantage of the commission's order. The order had changed the conditions under which the company proposed to issue the stock by disapproving the plan to issue non-voting preferred stock and requiring that the par value of both issues be made \$100.

SEABOARD AIR LINE.—Bond Extension.—The Interstate Commerce Commission has granted authority for the Seaboard Air Line to enter into agreements for extending the time of payment for \$2,500,000 Seaboard & Roanoke first mortgage bonds to July 1, 1931, with interest at the rate of 5 per cent and to enter into an agreement providing for redemption of the bonds at the option of the carrier.

ST. LOUIS SOUTHWESTERN.—Bonds.—This company has applied to the Interstate Commerce Commission for authority to issue \$1,085,000 of first terminal and unifying mortgage 5 per cent bonds, to be exchanged for a like amount of first mortgage bonds of the Central Arkansas & Eastern.

WESTERN PACIFIC.—Bonds.—The Interstate Commerce Commission has authorized an issue of \$2,600,000 of first mortgage 5 per cent bonds, to be sold to the highest bidder, as the company had proposed in its application, but at not less than 92.

WESTERN PACIFIC.—Bonds.—The Interstate Commerce Commission has authorized the issue of \$2,600,000 first mortgage 5 per cent bonds, series A, to be sold to the highest bidder but at not less than 92 per cent of par. It is understood that the Western Pacific Railroad Corporation which owns the capital stock of the operating property intends to bid for the bonds. The proceeds of the issue are to be applied for additions and betterments. The company proposed to issue \$3,000,000 of bonds and intended to apply \$501,528 as an advance to the Sacramento Northern, a subsidiary, for the construction of a new line. Action concerning this part of the application was deferred on the ground that the construction project is not yet under way.

Average Price of Stocks and Bonds

	June 22	Last Week	Last Year
Average price of 20 representative railway stocks	95.89	94.48	79.63
Average price of 20 representative railway bonds	96.78	96.76	91.31

Dividends Declared

Great Northern.—Preferred, 2½ per cent, payable August 1 to holders of record June 25.
 Kansas City Southern.—Preferred, 1 per cent, quarterly, payable July 15 to holders of record June 30.
 Louisville & Nashville.—½ per cent, extra, payable August 10 to holders of record July 15.
 Missouri-Kansas-Texas.—Preferred A, \$1.50, quarterly, payable August 2 to holders of record July 15.
 Northern Pacific.—1¼ per cent, quarterly, payable August 2 to holders of record June 30.
 Northern Securities Company.—4 per cent, payable July 10 to holders of record June 24.
 Pittsburgh, Cincinnati, Chicago & St. Louis.—\$2.50, semi-annually, payable July 20 to holders of record July 10.

Valuation Reports

The Interstate Commerce Commission has issued valuation reports, tentative and final, finding the final value for rate-making purposes of the property owned and used for common-carrier purposes, as of the respective valuation dates, as follows:

FINAL REPORTS		
Brownstone & Middletown.....	\$70,378	1917
Maxton, Alma & Southbound.....	132,435	1918
Midland Terminal.....	1,308,500	1919
TENTATIVE REPORTS		
Atlanta & West Point.....	6,053,000	1918
Houston, East & West Texas.....	4,352,000	1918
Nevada Central.....	528,700	1917
New York, Susquehanna & Western.....	14,263,500	1918
Oklmulgee Northern.....	310,000	1919
Pacific Coast.....	5,029,165	1916
Western Allegheny.....	2,002,500	1918
Wilkes-Barre & Eastern.....	3,175,000	1918

Railway Officers

Operating

G. C. Macdonald, acting superintendent of the Michigan Central, with headquarters at Bay City, Mich., has been appointed superintendent, with the same headquarters, succeeding **R. E. Laidlaw**, transferred.

T. W. Cardwell, assistant trainmaster on the Southern Pacific, with headquarters at Susanville, Cal., has been transferred to the Sacramento division. **E. C. Pearce** has been appointed assistant trainmaster at Susanville in place of Mr. Cardwell.

T. M. Flynn, assistant to the general superintendent of the Northern Pacific, with headquarters at St. Paul, Minn., has been appointed acting superintendent of the Dakota division, with headquarters at Jamestown, N. D. He entered the employ of the Northern Pacific on January 16, 1908, as chief clerk to the general superintendent at Livingston, Mont. In May, 1909, he was promoted to trainmaster of the Yellowstone division, with headquarters at Forsyth, Mont., and in February, 1925, was appointed assistant to the general superintendent, with headquarters at St. Paul, which position he has held until his recent appointment.

C. F. Moyer, who has been appointed superintendent of the Ontario division of the New York Central, with headquarters at Oswego, N. Y., was born on October 19, 1873, at Brier Hill, N. Y., and was educated in the public schools. He entered railway service in May, 1887, as an operator on the Rome, Watertown & Ogdensburg (now a part of the New York Central) and until June, 1893, served in that capacity in various places on the above mentioned road as operator and clerk on the New York & New England (now a part of the New York, New Haven & Hartford). On the latter date he became chief clerk on the Rome, Watertown & Ogdensburg at Gouverneur, N. Y., and in April, 1894, he became agent at Edwards, N. Y. For several years he was with the New York, New Haven & Hartford, serving consecutively as operator and clerk at Great Barrington, Mass. On March 1, 1897, he returned to the New York Central at Watertown, N. Y., where he served as operator and train dispatcher and night chief dispatcher until December, 1906, when he was promoted to chief dispatcher at Richland, N. Y. From October, 1907, to April, 1908, he was assistant trainmaster at that place. He then served successively as assistant trainmaster at Philadelphia, in the same capacity at Watertown, N. Y., and then as trainmaster with the same headquarters, which position he was holding at the time of his recent appointment as superintendent.



C. F. Moyer

Traffic

E. E. Larkin has been appointed general agent of the Union Pacific, with headquarters at Reno, Nev., succeeding **F. D. Wilson**, who has retired.

F. C. Coulter, freight trainmaster of the Panhandle division of the Pennsylvania, with headquarters at Pittsburgh, Pa., has

been promoted to assistant to the superintendent, with the same headquarters. **F. W. Stoops** has been appointed freight trainmaster of the Panhandle division, succeeding Mr. Coulter.

Mechanical

Lewis Archer has been appointed master mechanic of the Virginia division of the Seaboard Air Line, with headquarters at Raleigh, N. C., succeeding **T. M. Price**, deceased.

Engineering, Maintenance of Way and Signaling

Shelton MacKenzie, assistant chief clerk in the office of the superintendent of the Southern Pacific at El Paso, Tex., has been promoted to land and tax office engineer, with the same headquarters, a newly created position.

Obituary

Bruce Wyman, specialist in transportation law and public utilities, died at his home in Waban, Mass., on June 21, at the age of 50. Mr. Wyman was professor of law at Harvard from 1901 until 1914, and was secretary of the board of trustees of the Portia Law School. He was commerce counsel for the New York, New Haven & Hartford, consulting counsel for the Chicago, Burlington & Quincy, the New York Central and other railroad and steamship corporations. Mr. Wyman was also counsel for the National Civic Federation and legal investigator for several years for the Port of Boston.

William G. Raymond, dean of the college of engineering of the University of Iowa and the author of a number of books on railway engineering and valuation, died in Iowa City, Iowa, on June 17, of pneumonia with complications affecting the heart. Dean Raymond was born at Clinton, Iowa, on March 2, 1859, and was educated at the University of Kansas, Washington University and the University of Michigan. He served as assistant engineer on location and construction of railways in the Mississippi Valley at various times during the period when he was receiving his education and later practiced as a general consulting engineer. He was appointed professor of civil engineering of the University of Iowa in 1904, and was made dean of the college of applied science a year later. Dean Raymond was the author of *Plane Surveying*, *Elements of Railroad Engineering*, *Railroad Field Geometry* and *Railroad Field Manual for Civil Engineers*. In recent years he was particularly concerned with railway valuation matters and was the author of a book on this subject, entitled *What is Fair?* and also *The Public and Its Utilities*. In 1918 and 1919 he was a member of the Iowa state board of conciliation, adjusting public utility rates during the war.



A Boston & Maine Bus Operation at York, Me.

